JUNE 1966 -- 50¢

RAILROAD MODEL CRAFTSMAN

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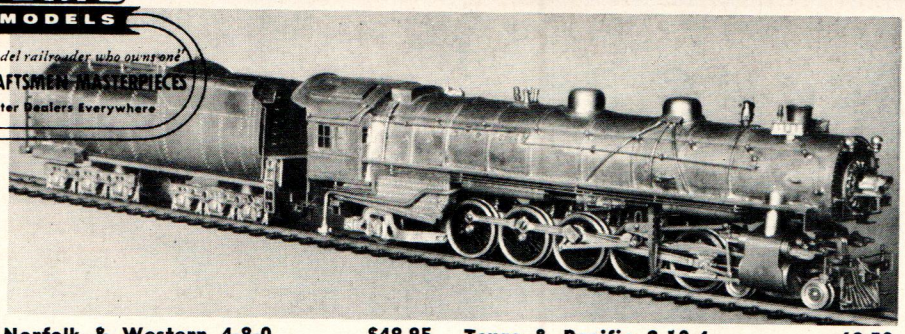

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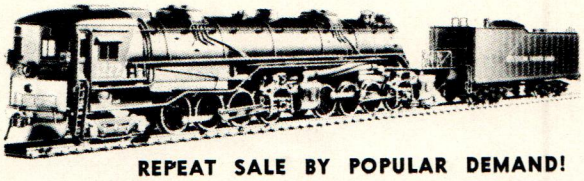

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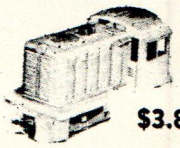

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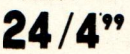

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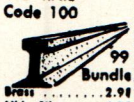

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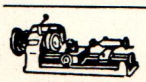

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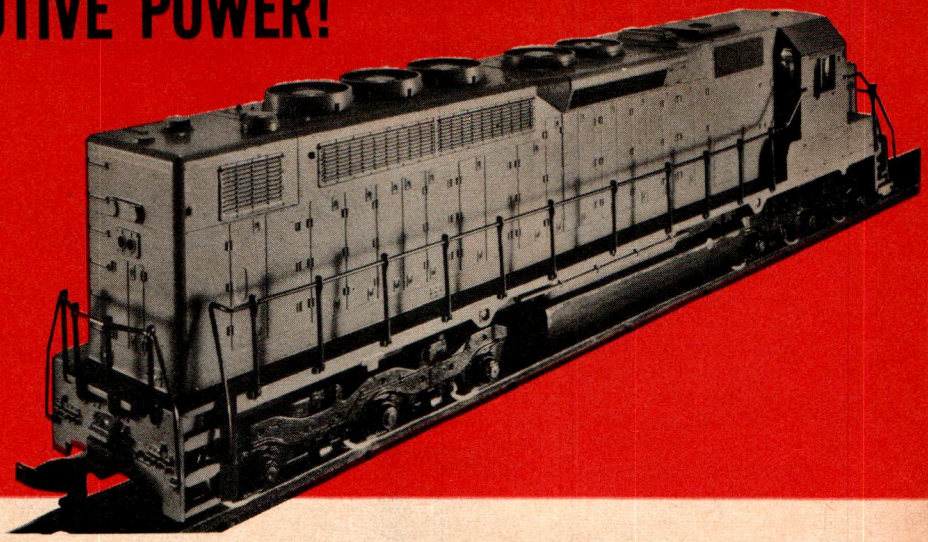
LET'S TALK ABOUT MOTIVE POWER!

Here is Athearn's NEW HO scale SDP-40 Passenger Diesel



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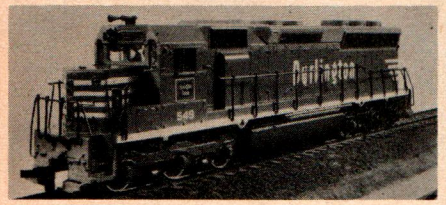

SD-45, Burlington (CB&Q), r-t-r --------$14.95

SD-45, Southern Pacific, r-t-r ----------$14.95

SD-45, Santa Fe, r-t-r ----------$14.95

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NOTES ON AN OLD TIMETABLE

SOME MONTHS back we mentioned the hope of some modelers that the 1971 NMRA National Convention might possibly be held in the British Region, a region which thus far has never had a national convention. The European model railroad organization, MOROP, hasn't yet decided on its convention site for 1971, but it could also well be in England. The result could be the first truly world-wide model railroad gathering ever held, and would undoubtedly draw leading modelers from Australia, Japan, Africa, and other areas.

The world wide gathering would require a lot of hard work. It would also mean that many modelers would have to start socking away some extra cash now. Undoubtedly special charter flights to Britain for NMRA members would be available from both United States and Canadian points, greatly reducing the transportation charges.

For many modelers and their families, this could be the dream trip of a lifetime, including with it memories of the world's greatest model railroad convention. All wives in favor, speak up now!

It's circus time. The Greatest Show on Earth is touring the country again, by rail. The Circus World Museum is getting ready to hold its annual July 4th celebration in Milwaukee, complete with parade and steam powered train. Smaller motorized shows and carnivals will be hitting smaller cities and rural areas. Perhaps the pages which follow will provide an inducement to build a circus train for your own railroad. Wagons and animals are offered in both HO and O, along with some kits for flat cars, stock cars, and conventional Pullman cars.

Most of the spring regional conventions are over but the RMC timetable still lists a good bit of activity. Coming up in June is the national convention of the Train Collectors Association, Inc., at Santa Monica, California. And in August, the National Model Railroad Association, Inc., will hold its big blast in Cincinnati. From the location, we anticipate strong traction and O scale participation. Still some mightly good trains chugging, or growling, into Cincinnati.

Hal

JUNE 1966 Vol. 35, No. 1

RAILROAD MODEL CRAFTSMAN

Including TOY TRAINS combined with ELECTRIC TRAINS and HOBBY RAILROADING, MINIATURE RAILROADING, MODEL & RAILWAY NEWS, THE O GAGER, and THE MODELMAKER (Est. 1924) Magazines.

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THE COVER

Russ Porter caught the Schlitz Brewery sponsored Circus World Museum Special last July, enroute from Baraboo to Milwaukee behind CB&Q 2-8-2 No. 4960, over C&NW trackage. The scene repeats again this July 4th, bigger and better than ever. And there's more circus material, past and present, on page 16 of this issue.

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SAFETY VALVE

It Must Have Been a Merger

In Paul Larson's article "Ideas Make The Railroad", in your April 1966 issue, why is "Neosho", in Chicago, Neosho River, & Pacific RR, abbreviated with an "M", as CMR&P?

Except for this one thing, this is an excellent article. To build models is one thing, but to Model is another. Please continue this basic treatise on the philisophy of model railroads.

E. E. (Bud) Cramer, Jr.
2131 W. Greenbriar Dr.
Phoenix, Arizona 85023

Would you believe that in order to get trackage rights down by the river, the old CNR&P had to buy the short three block long Missouri River Terminal Railroad and Barge Company. And in the merger, the CNR&P became the spanking new Chicago, Missouri River, & Pacific Railroad? Ed.

Wanted

How about including some material on railroad yard cranes that power themselves?

Steven M. Pickens
1112 Fairhaven Ave.
Burlington, Washington

How about plans for the Fairbanks-Morse "Erie-built" 2000hp cab unit of 1945, used on the Olympian-Hiawatha as well as on many other roads and name trains?

John E. Chawat
110 Stella Court
Lynbrook, N. Y.

A Collector's Item

The Lionel Standard Gauge book ad in your April issue showed a cover illustration that is a variation of the copy I have. Mine shows a 408 and 400E while the April ad showed an earlier 38. Is there a variation on this book or is the ad misleading?

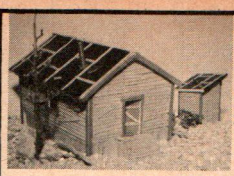
Alden E. Miller
3212-34th Ave., South
Minneapolis, Minn. 55406

Sorry about that, chief! The April ad showed the original dummy mock-up made prior to actual publication, and somehow seems to pop up every so often. There are no variations of the book other than what you purchased. Ed.

Sorghum Molasses

I enjoyed E. L. Moore's article on the old time sorghum mill in the April RMC. However one detail bothers me. I believe that the mill is being pulled backwards. All the sorghum mills in this part of the country are pulled counter-clockwise. Perhaps Mr. Moore is letting his horses shorten his other two legs but if he is he had better tell his man to move to the other side so the sorghum will get pulled through.

Pat Malone
Darling, Mississippi



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3/2 New Haven—W
9/1 New York Central—B with B&W Heralds
9/2 New York Central—W with B&W Heralds
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Armature	2.75	2.50	2.75	3.25
Brush plate & spring assy.	40c	35c	40c	75c

STEAM ERA HOPPER CARS
Varney plastic Tuscan Red outside braced twin hopper bodies & Lindberg sprung trucks with RP25 wheels. Easy-to-assemble kit requires only 2 screws to secure trucks and 2 coverplates to hold X2f couplers in place. To hold price down we do not supply weight or coal load. Both are easily made by the modeler. (Dealer Min. 6) **$1.49**

SAME AS ABOVE but with unlettered black plastic body **1.29**

CUSTOM DRAWBARS—Brass stock .020"x1/4" with .128 holes spaced as follows: 3/4", 13/16", 7/8", 15/16", 1", 1-1/16", 1-1/8", 7-3/16". May be assorted. ..... **4 for .50**

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Round number plates, No. 321-12 ..... **3 for 50c**
Keystone number plates, No. 321-11 ..... **3 for 50c**
UP Shield number plates, No. 321-11 ..... **2 for 50c**

LINDBERG TRUCKS—Bettendorf sprung with RP25 wheels, Pair ..... **.69**

MACHINE SCREWS—Slotted heads unless otherwise stated. One size per doz. Doz. ..... **.30**

2-56 Screws
Round head—1/8", 3/16", 1/4", 5/16", 3/8", 1/2", 5/8", 3/4", 1-1/8"
Flat head—1/8", 3/16", 5/16", 3/4", 1"
Fillister head—5/16"
Phillips—1/8" pan head & 3/8" round head

3-48 Screws
Round head—1/4", 3/8"
Flat head—3/16", 3/8", 1/2", 1"
Pan head—1/8", 1/4"

4-40 Screws
Flat head—3/16", 1/4"

Self-tapping Screws
No. 00 x 5/32" pan head
No. 0 x 5/32" Phillips pan head
No. 0 x 3/8" pan head
No. 1 x 3/16" Phillips pan head
No. 2 x 3/16" pan head
No. 2 x 1/4" pan head

Miniature Screws
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00-90 x 3/16" Optical

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No. 233-1 for Long Haul Tender ..... **.25**

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H-9 Valve hanger. **1.00**

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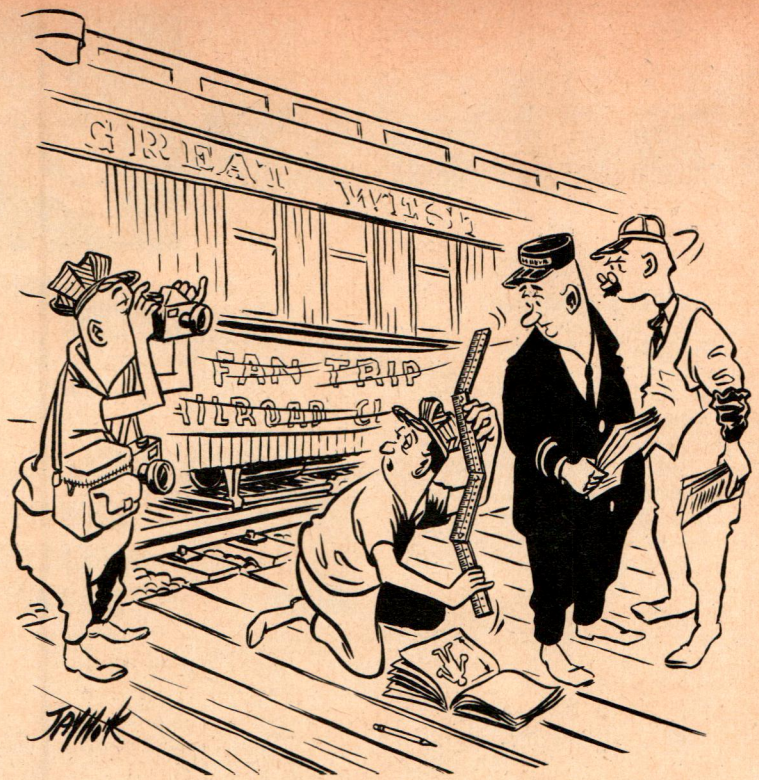

"... yeah, keep putting it off then one day, like everything else, we'll find they've been scrapped!"

That Strasburg Camelback Again

I must agree with you that (Feb. '66 RMC) the last camelback locomotive in regular service in a U. S. railroad was the Jersey Central No. 774 4-6-0.

I had the pleasure of riding behind this engine while it was still in regular service. I believe the locomotive is now at the Museum of Transport, in St. Louis.

As far as the little 0-4-0 camelback on the Strasburg, I believe this railroad has too much museum type atmosphere to state that if is used in regular service. Actually, when it is fired up is usually putters around Strasburg Station switching cars, and this not very often.

Harry J. Wagner III
7521 Rudderow Ave.
Merchantville, N. J. 08109

Dick's Carrtoon!

Re: Cartoon on page 62 April 1966 RMC.

Look no further than the Calico Mine Railroad, located on Knott's Berry Farm, Buena Park, California, for a beautiful trestle over a running stream of water *inside* a tunnel.

Dick Carr
259 Water St.
Santa Cruz, Calif.

Wants Undecorated Cars and Locos

Just read Wayne Mogielnicki's letter in the April issue. My objection is not so much the lack of specific paint schemes, but the lack of undecorated models available as in the past. It is difficult to remove lettering or entire paint jobs when necessary. I find that by using decals, I can get a more accurate paint job.

Also, in the photo on page 27 of the Erie Limited, where can I get plans and photos of the baggage cars and coaches shown?

William C. Hoar
238 Morgantown St.
Uniontown, Pa. 15401

The Erie Publicity Dept. photo has had the roofs retouched on the cars so as to present a clean silhouette. In actual practice, Erie through trains had a widely varied consist of flat, arch, monitor, streamline, and Stillwell style roofs, usually mixed indiscrimately. Ed.

Whalebacks On the Espee

I would like to add to the commentary in the Feb. 1966 RMC regarding SP tenders. The term *whaleback* has also been used to describe the *haystack* tender and is perhaps the more commonly used of the two. The Southern Pacific Company designated them as Semi-Cylindrical, or SC. All tenders of the Southern Pacific had a number which was different from and in addition to the locomotive number. Both the tender number and the classification number appeared on a metal plate found on both sides and thhe tender frame. The classification number 73-SC-1 states that th e tender had 7300 gallon water capacity, was of semi-cylindrical con-

(Continued on page 10)

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READY TO RUN — WE HAVE EVRYTHING IN HO
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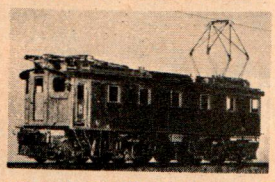

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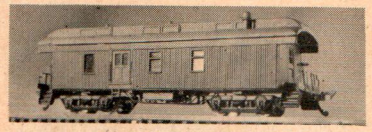

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TRACKSIDE SPECIALTIES
HOME OF "HO" CUSTOM BUILT ENGINES AND MODEL RAILROAD EQUIPMENT
12 Barker Rd., Somerset, N. J. 08873

struction, and was the first of the series.

Schopp's commentary implied that whalebacks appeared only in narrow gauge service. There were five classes of this type tender to be found behind standard gauge locomotives. These are: 62-SC, 70-SC, 73-SC, 98-SC, and 120-SC.

The 70-SC tenders were originally acquired with the El Paso & Southwestern while the others are original equipment. The 120-SC tenders were rebuilt 98-SC's. The object was to provide additional fuel and water for the 4-6-6-2 and 2-8-8-2 types. After these locos were scrapped in the 1947-1949 period, the 120-SC tenders were found behind F-1 class 2-10-2s, 2-8-4s, 2-8-2s, and some 2-8-0s. The 120-SC will appear behind the forthcoming AM-2 from Balboa Scale Models.

T. L. Howes
3022 Capewood Lane
San Jose, Calif. 95132

I don't believe I ever heard an SP engineman use the word "tender". They were always called tanks, and we had three basic types: round (Vanderbilt), square, and whaleback. The whalebacks made good switch engine tenders because they were easy to see back over. Incidently, air pressure was applied to the oil compartment to force the fuel to the firebox as the tenders were quite low and gravity couldn't be depended upon.

Bill Pirie
1934 East 1st Ave.
Albany, Oregon 97321

Northern Pacific Q-6

Please note that the Loco Builder Photo No. 262 shows our Northern Pacific Q-6 Pacific, not Great Northern as you state. Thank you.

Raoul Martin
Northwest Short Line
Seattle, Washington 98111

Heavy Juice Bugs Get Their Pantographs Up!

Now that the diesel fans have had their say, and have Geeps and SD models up to their ears, I think its high time that a few heavy electric buffs spouted off. I, and many other electric fans are getting fed up with little B-B interurban steeple cab and box-cab locos. Its high time that a few of those growler-making people came out with a low cost plastic Milwaukee EP-4 or a Pennsy DD-1.

Also, some of the newer modelers of the overhead wire are starting to wonder if there is such a thing as pre-fabricated catenary?

I've spouted enough juice for now, but more of us will be spouting off letters like this (I say this as a warning to you and the growler-making people), so be prepared.

Arthur Jacobsen
2616 4 Ave. N
Great Falls, Mont. 59401

Guarantee a 100,000 unit salt and I'm sure one of the major manufacturers will make anything you want. Unfortunately, the highly local appeal of most heavy traction units makes them a pretty poor risk insofar as mass sales are concerned. A Milwaukee Olympian loco would look pretty silly with New York Central T-3a lettering, but an EMD GP-35 can be lettered for many railroads. With few exceptions, the heavy electric enthusiast is going to have to be content with hand crafted all brass imports. Ed.

Occasional issues slant in favor of the Diesel Men, The Steam Men, and the Trolley Men. Should not our opinionated editors consider the Heavy Electric Men?

H. Wickersham
Box 162
Curundu, Canal Zone

Aha, there's at least two of them!

DISPATCHERS REPORT

Swift Line, new N gauge outfit at 2143 E. Huntington Dr., Duarte, California, is now offering a series of 5 N gauge basswood kits, in which are included such extras as lichen moss for shrubs and trees, structure papers, and small detail pieces. Initial releases are the A5101 combination Station at $4.00, A6151 Engine House at $3.00, A6201 Set of 4 Trackside Buildings at $3.00, A6251 Main Street Buildings Set A at $4.00, and A6252 Main Street Buildings Set B at $4.00. Also available is a package of C6100 cork roadbed, five 3 ft. pieces, at $2.00.

Floquil Products, Inc., Cobleskill, N. Y. 12043, has made its innerseal caps available separately by direct mail only, postpaid, at 12 for 25c. This is, we think, a real service to Floquil users who sometimes find that the seals break, resulting in hardening of the paint. With the new innerseals, Floquil should remain in its liquid state indefinitely. A good idea and how come somebody didn't think of it before?

TT gaugers have been heartened in recent months by renewed activity in their favorite scale. A new outfit, *Wallace Scale Models*, 47 West Street, New London, Conn., is trying to discover how many TTers would be interested in some all-brass imported locomotives in the $25-$40 range. If interested, drop them a card.

Another new HO outfit is *Calumet Locomotive Works*, P. O. Box 474, Glenwood, Ill. 60425, whose specialty is providing customized diesel locomotive painted, numbered, and decaled true to prototype. They use diesels by all the manufacturers, as well as Athearn shells only for those

who already have underframes. Calumet's service consists of stripping down original paint where necessary, removal of all cast on detail (such as grab irons, lift rings, etc.) and replacement with detail parts by Cal-Scale, Kemtron, or Walthers. Painting and lettering will follow the prototype and the outfit claims they will not paint locos for specific railroads unless that road had that engine! Sounds like a great opportunity for you busy executives who no longer have the time to do your own!

Central Locomotive Works, 2705 Honey Road, Lake Park, Florida, has come up with a price list listing all parts for their beautiful quarter inch scale Southern Railway Ps4 Pacific, which they'll send to any model railroader sending them a stamped addressed envelope. All castings on this loco are lost wax, including drivers which are equipped with steel RP-25 tires. Boiler, cab, tender body, and main frame sides are not available separately. Incidently, CLW bossman Bob Smith has sold a pile of his automatic couplers, which work with regular O scale dummies and also with Monarch working knuckle couplers.

William K. Walthers, Inc., 1245 South Water Street, Milwaukee, Wis. 53202, has their new O Gauge catalog off press. The new 1966 Edition lists at $1.00 postpaid, and includes a tremendous variety of available O gauge equipment, much of it adaptable to tinplate use.

Supply Car

Coronado Scale Models, 1544 E. Cypress St., Phoenix, Arizona 85006, has purchased the mail order sales section of Valley Car Works, which should make Coronado the leading supplier of ¼AAR scale supplies and a fine source of On material.

Gandy Dancer TT gauge kits are back and going strong under the guidance of *Albert J. Soulier,* Box 4, Amenia, N. Y. 12501. A1 has been upgrading the line with a trainload of new releases including a Blatz Old Heidelberg beer reefer with silk screened sides less trucks at $2.90, a giant 51 ft. Menasha Woodenware green boxcar also at $2.90 less trucks, and a 41 ft. cattle car at $2.50 with five road names replacing the older Gandy Dancer cattle car kit. And coming is an Airlside hopper in four road names. The catalog is a must for all TTers at 50c. Watch their ads for new releases.

Kar-Line, 274 Perry St., East Aurora, N. Y. 14052, has further expanded its line of 40 ft. ready to assemble customized box car kits to 270 different road names and types, and now including five reefers. The AAR cars include a spray painted molded car body with special decal lettering, Central Valley CV-3 trucks, and your choice of X-2f or Kadee couplers. The cars list at $4.95 per kit and include such diverse road names as Sante Fe map with choice of 14 different train names on the opposite side, C&S, Frisco, GM&O Rebel, LV white, Rutland, Pere Marquette, and TH&B. Specially colored cars listing at $5.25 are also offered and include A&S yellow, IC aluminum.

Cal-Scale, P. O. Box 475, Pinedale, California, offers an illustrated folder for 15c which is a must for any HOer wanting to upgrade his equipment, whether the finest importest brass or economy plastic rtr equipment. Listed are intricately detailed castings in lost wax, some also offered optionally at lower cost in plastic. Just the thing for super detailing cars and locos of all types.

A new O gauge outfit, *Frederick Manufacturing* offers the one time Graceline O gauge sprung trucks, now made with RP-25 metal wheels. 6-wheel Pullman truck kit lists at $7.75 complete. Twin coil Commonwealth at $5.95, S.P. Daylight Pullman truck kit also at $5.95 and 4-wheel passenger at $5.85. The smaller flange in O scale is in stark contrast to scale flanges of 10 or more years ago. Address is 10666 Linden Ave., Bloomington, Calif. 92316.

Narrow Gauge

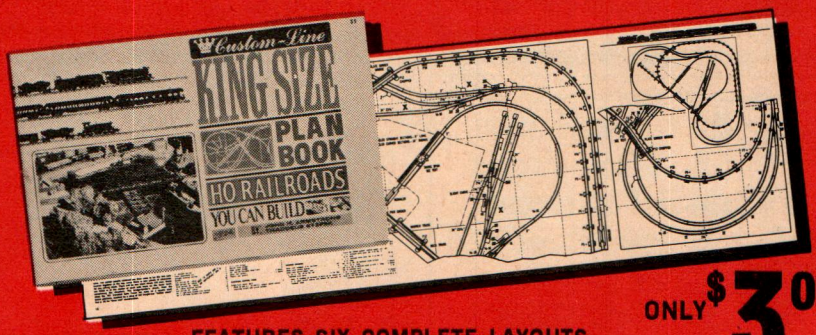
Pacific Fast Mail, P. O. Box 57, Edmonds, Washington 98020, has come up with a 20-ton 2-truck Shay, with optional narrow gauge trucks. HO narrow gaugers are now coming up

INTRODUCING A BRAND NEW...CUSTOM-LINE

KING SIZE

ATLAS

HO RAILROAD PLAN BOOK



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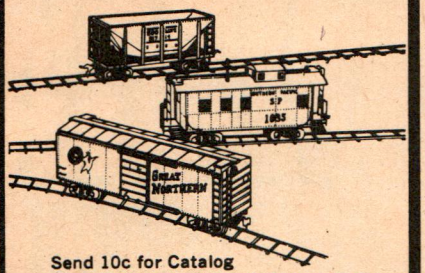

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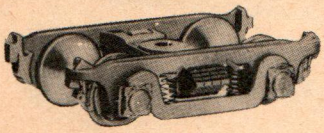

201 Roller Bearing 4-Whl. Passenger ..... Pr. 1.69
202 Exp. Reefer as above but 33" Whls. ..... Pr. 1.69
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103 Archbar Freight ..... Pr. .95
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Our new RP-25 Low Contour trucks and wheel sets provide up to 50% increased power for locos and far less dirt build up on flanges. Less friction, bind, and dirt means better operation.

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THE CLIFF LINE SCALE MODELS
Box 322, Station 1
North Hollywood, Calif. 91605

CHARLES M. ALBERTY, 8925 West Thurston Ave., Milwaukee, Wis. 53225, modified this ACF center-flow covered hopper car from an Ambroid kit using Walthers' decals to create an exact model of the Great Northern car.

with the problem of converting HOn3 equipment to HOn2½, or of adapting HOn2½ equipment to HOn3. Meanwhile, a few diehards like Bruce Bowden content themselves with HOn2.

And speaking of two foot equipment, *Scale Railway Equipment Co.*, is offering On2 Maine type arch bar trucks at $3.95 a pair. Don't know if these are assembled or not, but doesn't really matter to real modelers, does it? Plans for a Sandy River parlor car drawn for RMC by Walter Olevsky are coming up in an early issue.

Midwest Traction Lines, Inc., Box 230, Marion, Ohio 43303, is offering a set of 3 duotone prints, 11x21 picture area, of the Electroliner (North Shore), Great Northern Y-1, and the South Shore 900 class freight motor, shipped in a tube, for $9.00. Midwest recently released an HO Alco 2000 hp. B unit casting to match the Hobbytown A unit, complete with trucks, dummy, at $19.95 kit. . . .

Miniatures, Inc., Box 35, Hilliard, Ohio, overcoming some of its problems; has had its first castings sessions. They'll get that O gauge North Shore steeplecab in the works, yet.

Circus Cars

Modelers interested in starting a model circus or a circus train may experience some difficulty in getting kits and parts, but the basic materials are available. Here are a few known sources:

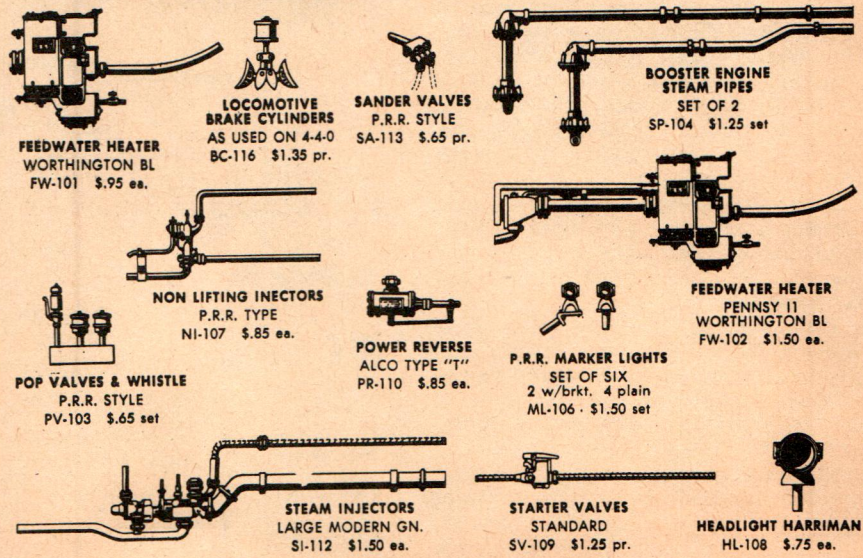
Wardie-Jay Circus, RFD 1, Underhill, Vermont 05489, HO and O flat cars and stock cars. Also circus wagons, animals, and figures. List 10c. Specify HO or O.

William K. Walthers, Inc., 1245 No. Water St., Milwaukee, Wis. 53202. O gauge circus wagons (plastic kits). Passenger cars suitable for advance, business, performer use, in HO and O.

Polk's Model Craft Hobbies, 314 Fifth Ave., New York, N. Y. 10001. HO carnival and circus wagons, amusement items. Also figures and animals.

In addition, consult suppliers of de-

NEW FROM CARY A new line of superb quality HO loco fittings in gleaming brass



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NOTE: All Submissions become the Property of AHM. Reward will constitute full payment for ideas we consider usable. (Contest Void Where Prohibited By Law). Contest over Oct. 31.

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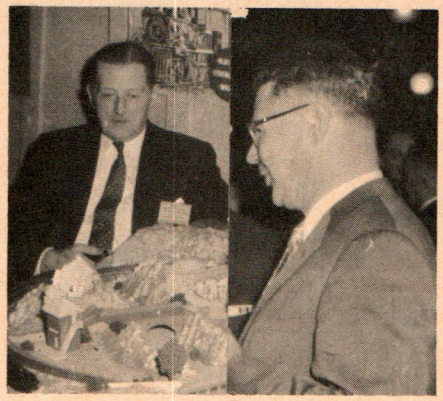
cals, figures, and passenger cars, for equipment and accessories which can be adapted to circus use. Also available are many figures to a scale slightly larger than quarter inch, which are nevertheless used by O gauge modelers. Check with your local hobby dealer.

Out The Tower Window

We've speculated before as to how the newer cars are rapidly replacing the old, and how bright new colors are becoming numerically larger. Looking out our window we can spot a lot of freights. Two years ago these were all F-3, F-7, FT, and Alco road unit powered. Today most of the through runs are headed by assorted low hood units of the second generation. Piggy back cars, plug door box cars, hi-cube boxcars, rack cars, giant tankers, latest style reefers, air-slide hoopers, and other modern types are found in every consist. The biggest thrill now comes from spotting an old short wooden Nickel Plate stock car, or perhaps an outside braced Soo Line boxcar of a bygone era. So if there isn't something new, there's something old. And who, we wonder, will be first out with a model of the Ontario Northland AAR standard boxcar in its new colors?

Last Run

Charles Binder, 67, March 3rd, for 27 years in the sales department at Polk's Model-Craft Hobbies, Inc.



Frank Westbrook, 70, March 23. Pioneer model manufacturer going back to the early 1930's of car kits in O and OO bearing his name. Later affiliated with Mantua Metal Products Co., retiring in 1965. Long active in hobby industry activities. Survived by a son and daughter.

Charles A. Pittman Jr., April 5. Manufacturer of model railroad and cine motors and O gauge trolley cars. Charter member of the Train Collectors Association, Inc. Long time secretary of the Eastern Model Railroad Manufacturers Ass'n. Survived by his wife, Shirley, and son, Charles A. Pittman III, who continues the two Pittman motor and development companies.

I'M GIVING TO THE AMERICAN CANCER SOCIETY THIS YEAR.

MAYBE SOME YEAR IT WON'T BE NECESSARY.

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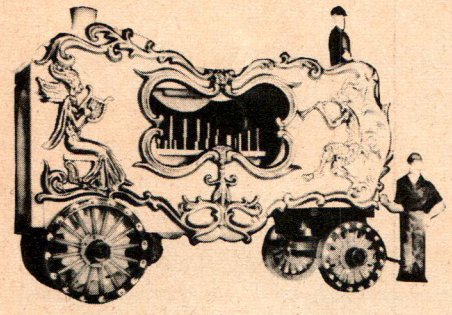

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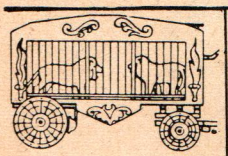
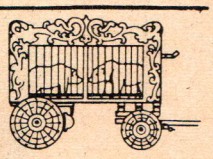


BT-104 .... $1.00
LION CAGE w/2 Lions



BT-105 .... $1.00
BEAR CAGE w/2 Bears

Circus Wagon kits (specify)	ea	1.00
F208 Standing Figure	ea	.65
F229 Seated Figure	ea	.65
"O" Scale Catalog (NEW 1966)		1.00

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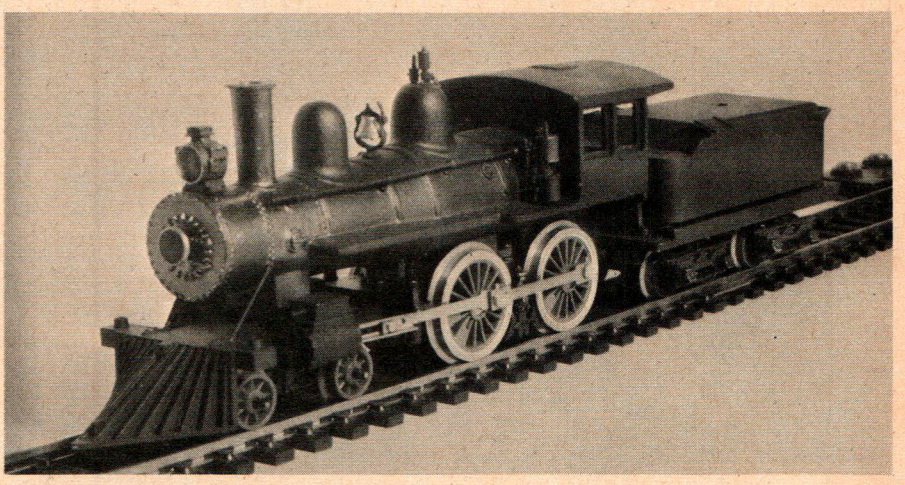
TEST TRACK



Chunky new Cary kit-built Baldwin 1900 vintage 4-4-0 assembles easily and adapts to a variety of prototypes. Loco utilizes Tyco proven General mechanism with tender drive. Kit is priced at $27.50.

Baldwin 1900 Vintage 4-4-0: HO

Mfd. by Cary Locomotive Works, Rte. 2, Box 240, Cary, Illinois.

Cary, if you'll pardon the expression, has finally gone whole hog after establishing a good reputation as a supplier of boilers and other parts. Their new whole hog is a beautifully proportioned Baldwin 4-4-0 of the 1900 era. Locomotives of this type could be found on even the larger railroads right up through 1950, sometimes outlasting larger, more modern steam power on branch lines. Many short lines also operated steam power of this type until conversion to diesel operation. The modeler could use this loco as a switcher, in peddler freight service, for light passenger runs on a modern 1940-ish pike, or for through limited runs on a period pike. It's a versatile little engine and the Cary method of construction lends itself to a wide variation in detail application to suit any region, fuel requirement, or family design.

For their Baldwin 4-4-0, Cary chose to utilize the Tyco General mechanism and tender. Drivers are 61½" diameter, smaller than on some 4-4-0 types, but there are plenty of prototypes that had this size. Cary's contribution is the heavy cast metal boiler including stack, domes, and cab, plus a quantity of lost wax castings.

Before beginning assembly, study the directions and drawings carefully and identify all parts. Assembly is not complicated by an outside valve gear and is fairly simple. Most modelers should not experience any difficulties. Construction is started by cleaning up burrs and flash from the castings, which would show up like a sore thumb if not removed, especially after painting. Use a jewelers file to clean out the flash between the driver spokes.

Tender assembly is not difficult but differs from most kit locos because the motor is mounted on the tender frame. It is suggested that before mounting the motor, you attach the trucks with the self tapping screws provided. The reason for this is to prevent the screwdriver from slipping the screw, going through the tender frame wall, and possibly damaging the motor armature. Instructions otherwise are good and complete and should be followed throughout.

Boiler assembly is simple and a drawing aides in identifying the investment castings, and fitting them

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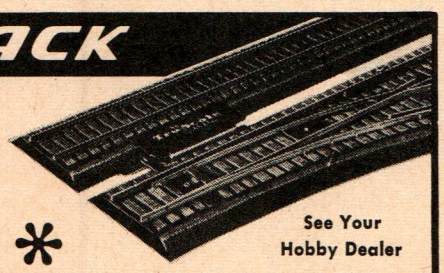
READY-TRACK features the famed Tru-Scale 'Hi-Speed' Switches with the closing frog, which eliminates 90% of all major derailing problems! No rail-gaps, nor any electrical dead-spots in the rails. The most fool-proof switch ever developed!



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5 Camp Trailer 40
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7r Opel Ambulance 40
8 Opel Rekord 1957 40
8n Opel Rekord 1961 40
8r Opel Rekord 1963 40
9 Fiat Sedan 40
10 Land Rover, olive 40
11 Opel Kapitan sedan 40
12 DKW Senad 40
12a DKW Junior 40
12g NATO Scout Car, olive, hitch 40
12n DKW Coupe w/hitch..40
12s DKW Universal 40
14 Mercedes 220s Sedan ...40
14c Mercedes 220 convertible 40
14b Mercedes 230 SL 40
14p Mercedes 220 coupe ...40
14x Mercedes Taxi 40
15 Mercedes 300 Sedan 40
15c Mercedes 300 convertible 40
16 Porsche convertible 40
16c Porsche CARRERA ...40
16s Porche Racer 40
18 Borgward Sedan 40
18i Borgward Isabella w/hitch 40
20 Ford Taunus 17m 40
20b Ford Taunus 12m 40
21 Lincoln Continental 40
22 Mercedes 180 sedan 40
23 Mercedes 30031 Sport...40
23c Mercedes 300SL convertible 40
24 Mercedes Racer 40
24c Cooper Racer 40
24L Lotus Racer 40
24v Vanwall Racer 40
25 Merceds 190SL convertible 40
25c Mercedes 190SL coupe .40
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36 Unimog Farm Truck ...80
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41 Pickup Truck, 3 ton....60
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41g MAN Army Truck Olive 95
41h Henschel Pickup 60
41f Henschel HS double cab 95
41 Henschel HS single-cab .95
42 Coal Truck w/load 50
42k Dump Truck, heavy ...75
42r Magirus trauck w/ crane 75
42s Magirus Saturn truck..60
43 Mercedes Coal Truck ...60
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43f Cab-over-Engine Pickkup 60
43g Mercedes LP 1620 Truck 1.00
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44 Chevrolet flat body 2½ ton 50
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46 Ford 2500 tarp Truck..50
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9602 Bridge Crane HD 2.50
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KIBRI Catalog 35c

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Model Ship Catalog.....35c

NATHAN R. PRESTON & CO.
P.O. Box 187 — Des Plaines, Illinois 60017

properly. Except for the air pump, all holes are pre-drilled. The air pump may be mounted on either side of the boiler and a No. 69 drill is needed for this hole.

No front windows are provided in the boiler casting. These may be drilled and cut out according to your own desire, following some known prototype of the period, preferably Baldwin.

After assembly and track testing, the brake cylinders should be painted and fitted. Particular care should be taken in mounting to prevent them shorting on the drivers. Holes are pre-drilled which makes the job relatively easy.

On the track test, our model tracked well and was very smooth running. Running light, the loco draws under ¼ amp. when adjusted properly. Pulling five modern freight cars, this loco drew under ½ amp., pulling them through a reverse curve of 18" radius up a 7% grade, which is not recommended for current draw exceeded manufacturer's recommendations and could result in a burned out motor. For a loco of this size, she handles a good train.

All in all, an excellent little loco with a reliable mechanism which can be made to look as good or better than models at twice the price. Changes made in stack, domes, cab, headlight and bell, pilots, tender, etc., would greatly alter the appearance of this loco. Great. Lee Nicholson.

LCL Freight Shed: HO

Mfd. by Mil-Scale Products, Box 4144 Western Station, Milwaukee, Wisconsin 53210.

Model S31 is another of Mil-Scale's versatile wood railroad structure kits. This one is an old double sheathed wood reefer body mounted on a

(Continued on page 51)

RMC TIMETABLE

NOTE: Items for RMC TT are welcome but must be received 6-8 weeks before issue in which item is to be inserted. Please print or type.

Old Toy Train Meet

GARFIELD, N. J. July 17. Symposium at American Legion Hall, Garfield. 7 A.M. until closing. $2.00 entry fee. Prizes. Contact William Vagell, 27 Passaic St. for details. Phone 201-777-4331.

NMRA Regional Conventions

INDIANAPOLIS, IND. June 3, 4, 5. Midwest Region "Indiana Sesquicentennial" Spring Convention, Sheraton-Lincoln Hotel. NMRA tape slides, live clinics, contests, fan trip, banquet. Info. F. T. Hughes, 7351 Hawthorne Lane, Indianapolis, Ind. 46250.

ROCKY HILL, N. J. June 18. Garden State Div. Meet on premises Pacific Southern Rwy., Washington St. (Rte. 518) nr. Rte. 206. Model Displays, op. hump yard, tower control w/remote cabs. Tech. presentations by PS members. Pre-Meet luncheon. Contact Jack Fitzgerald, 26 Shelley Rd., Kendall Park, N. J. 08824. Phone: (201) 297-3641.

BOISE, IDAHO. Aug. 5, 6, 7. Pacific Northwest Region "Challenger Convention," Hotel Boise. Fan trip—UP 844(4) Boise to Huntington and return. Banquet, Contest, Clinics, Layout Visitation, Movies, Model Displays, etc. $15.40, reg. before July 5. Info. contact Bill Chapman, P. O. Box 4242, Boise, Idaho 83705.

CASPER, WYO. June 4, 5. Rocky Mountain Region Spring Meeting. Clinics, layout visits, contest. Info. contact G. R. Cheatham, Jr., M.D., 3723 So. Poplar St., Casper, Wyo. 82601.

Club Notices

HICKSVILLE, LONG ISLAND, N.Y. West Island Model Railroaders—contact Jim Clokey, 457 Clocks Blvd., Amityville, N.Y. 11701. New members welcome.

TAMPA, FLA. Tampa Bay and Southern RR (HO) seeking limited amount of members. Layout under construction. For info. call or write Ladd Houda, 2314 Carroll Pl., Tampa, Fla. Phone: 932-6923.

EAST WEYMOUTH, MASS. South Shore Junior Model RR Club, 12 Cain Way, looking for new members, age 15-20 yrs. Meetings every Sun. 2:00 P.M. Visitors welcome.

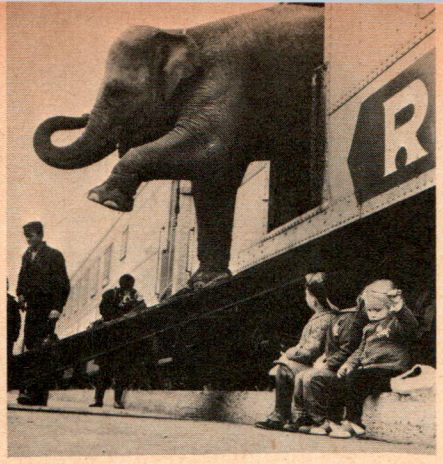
Fan Trips

BALTIMORE, MD., May 28-30. Baltimore Chapter, NRHS. Budd RDC trip, Baltimore to Buffalo via Pittsburgh, Memorial Weekend. Stops Silver Springs (Washington), Harper's Ferry, Cumberland and Hazelwood. Leave Baltimore May 28—return 30th. For schedule and rates contact Alan Crumbaker, 1135 Evans Way Baltimore, Md. 21205.

PUEBLO, COLO., June 19. Pueblo Soc. of Model RRers w/Denver & Rio Grande Western will operate Special Train from Pueblo to Salida and return thru Royal Gorge. Trip coincides w/White Water Boat Races down Arkansas River. Lunch included in ticket. Res. req. June 13. Contact R. M. Wexler, M.D., 310 Colorado Ave., Pueblo, Colo. 81005.

Trolley Museum

ORBISONIA, PA. Electric Trolley and RR Museum on Shade Gap Branch, East Broad Top RR. Free. Memberships open. Illustrated brochure from S. G. Shook, 160 Andover St., Wilkesbarre, Pa. 18702.



Ringling Bros AND Barnum & Bailey CIRCUS

The Greatest Show On Earth uses railroad transportation to move its conglomeration of people, animals, and equipment, safely and quickly between widely spaced cities.

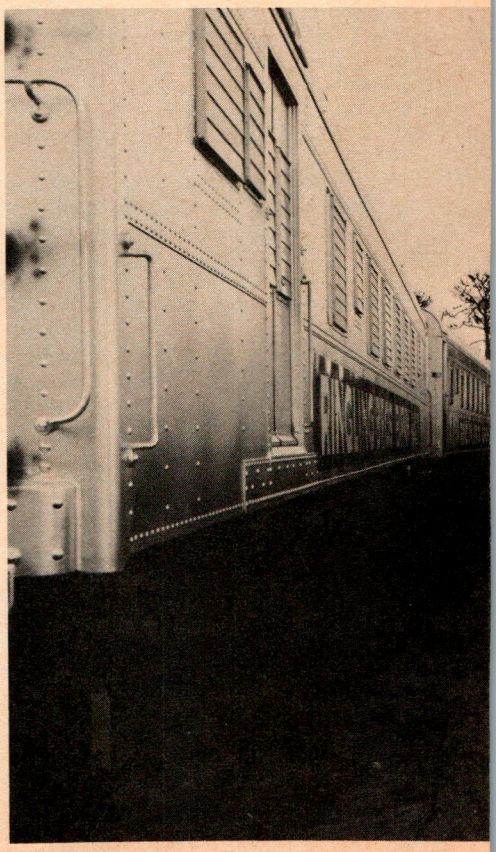
Modern containers move about easily, hold far more than old time circus wagons. Tractors move these units about quickly, easily.

TOP: Targa, lead elephant of the giant RB-B&B Circus herd steps gingerly from her special car.

Specially designed containers fit snugly into long baggage cars in the modern circus. Tents are no longer used, eliminating pole, tent cars.

BELOW: Ringling Brothers-Barnum & Bailey Circus cars today are converted U. S. Army hospital cars of World War 2. Wagons no longer ride in the open.

Modern steel cars replaced older monitor roof fleet in late 1940s; are painted bright silver. Fleet is based at Sarasota, Florida.



OF THE MANY proud circus and wild west shows which once traveled the land by rail, today only one remains: the giant Ringling Brothers, Barnum & Bailey Combined Circus.

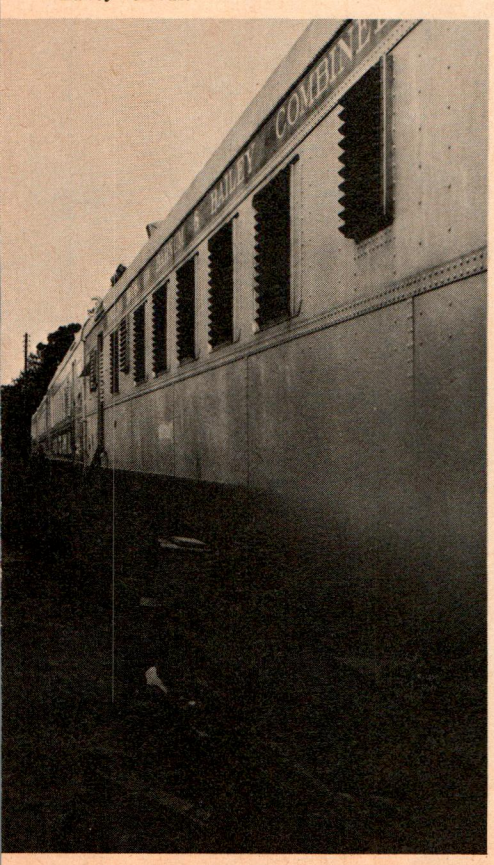
Photos courtesy Ringling Bros., Barnum & Bailey Circus.

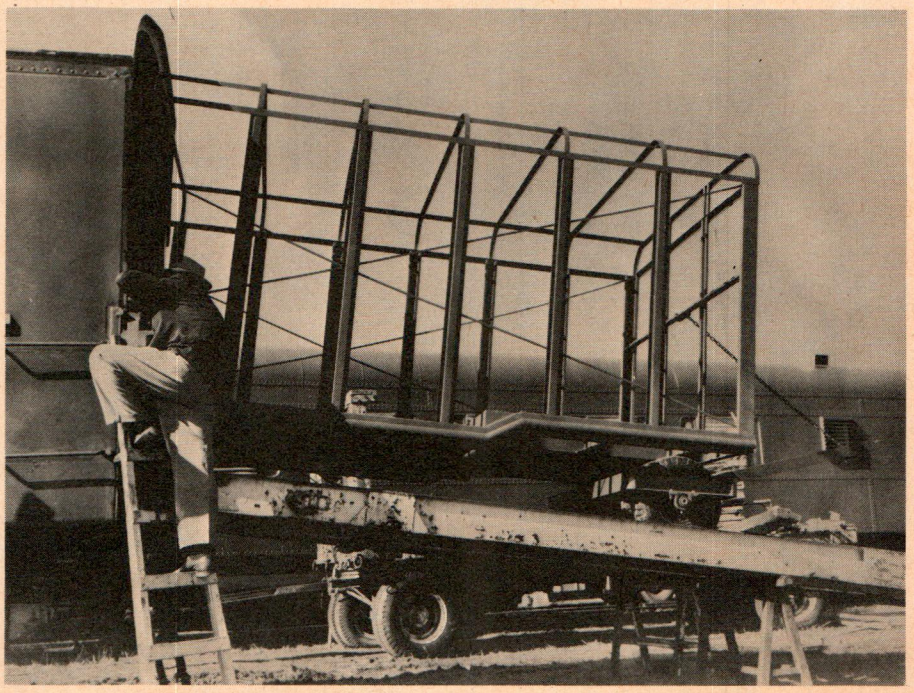
The Greatest Show On Earth has survived because it adapted itself to the changing mid-twentieth century world of jets, television, and automobiles.

After a brief post-war fling at motorized travel, plus the tent-fire tragedy; the show streamlined its operation by abandoning tents altogether, putting on the show instead in giant arenas. Consequent economies permitted tremendous cutbacks in cars, wagons, and laborers once needed for tent erection.

A fleet of war-surplus hospital cars were converted into modern quarters fo rall personnel. The once familiar 90 ft. flat cars were replaced with tunnel cars holding special contoured wagons capable of holding maximum loads.

For the Greatest Show on Earth, railroads are still the essential ingredient needed to rapidly and safely transport thousands of animals and people, plus equipment, the hundreds of miles between show cities.





By making every inch count, circus reduces transportation charges by using bare minimum of 90 ft. circus cars. Wagon just clears.

Ringling Bros and Barnum & Bailey Circus 1932

FIRST SECTION ("The FLYING SQUADRON")

Stock car # 10—Baggage horses
" " # 11— " "
" " # 12— " "

Flat car #109	Wagon	# 12	Baggage stock trappings	18 ft. long
	"	#150	Layout Dept.	16 " "
	"	#107	Automatic stake driver	12 " "
	Truck	#136	Mack tractor	
Flat car #110	Wagon	# 6	Commissary Dept.	20 " "
	"	# 46	Ring stock baggage wgn.	16 " "
	"	#108	Automatic stake driver	12 " "
	"	# 2	Cookhouse boiler wagon	14 " "
Flat car #111	"	# 7	Cookhouse refrigerator	18 " "
	"	# 10	Baggage stock canvas	20 " "
	"	#102	Water wagon	11 " "
	"	# 9	Blacksmith Dept.	18 " "
Flat car #112	"	# 11	Baggage stk. poles & gear	20 " "
	Auto	—	Station wagon	
	Truck	#128	Mack tractor	
	Wagon	# 5	Cookhouse baggage wgn.	17 " "
Flat car #113	"	# 8	Cookhse. canvas & poles	20 " "
	"	#103	Water wagon	12 " "
	"	#106	Automatic stake driver	12 " "
	"	# 4	Cookhse. baggage wagon	18 " "
Flat car #114	"	# 3	Cookhse. baggage wagon	16 " "
	"	# 1	Cookhouse water wagon	15 " "
	Truck	#132	Mack tractor	
	Wagon	# 14	Menagerie canvas wagon	21 " "
Flat car #115	"	# 15	Menagerie pole wagon	30 " "
	"	#104	Water wagon	11 " "
	"	# 13	Menagerie stake & chain	15 " "
Flat car #101	"	# 69	— GAGE (hyenas)	16 " "
	"	# 71	— GAGE (tigers)	15 " "
	"	# 88	— GAGE (hippopotms.)	20 " "
	"	# 87	GAGE (gensbk. & gnu.)	14 " "
Flat car #102	"	# 83	— (kangaroo)	14 " "
	"	# 85	— GAGE (tapir)	14 " "
	"	# 76	— GAGE (stork & crn.)	14 " "
	"	# —	Dragon float	— " "
Flat car #103	Wagon	# 07	Giraffe den	16 " "
	"	# 96	Giraffe den	16 " "
	"	# 92	Giraffe den	16 " "
	"	# 89	— GAGE (monkeys)	15 " "
Flat car #104	"	# 79	— GAGE (apes)	18 " "
	"	# 73	— CAGE (tigers)	16 " "
	"	# 80	— CAGE (puma & lps.)	14 " "
	"	# 84	— CAGE (brown bears)	18 " "
Flat car #105	Wagon	#121	Yellow ticket wagon	18 " "
	"	# 78	— GAGE (rhinoceros)	16 " "
	"	# 74	— GAGE (rhinoceros)	16 " "
	"	# 70	— GAGE (tigers)	16 " "
Flat car #106	"	# 47	Ring stock baggage wgn.	16 " "
	"	# 77	— GAGE (macaus)	15 " "
	"	# 81	— GAGE (deer)	14 " "
	"	#152	Baggage wgn. (spc. flts.)	20 " "
Flat car #107	"	#109	Menagerie trappings	16 " "
	"	#117	Elephant trappings	15 " "
	"	# 82	— GAGE (lions)	15 " "
	"	#116	Side show trunks	18 " "
Flat car #108	"	# 90	— GAGE (bls. rk. & ad.)	14 " "
	"	# 91	— GAGE (porcupines)	14 " "
	"	# 95	— GAGE (leopards)	14 " "
	"	# 53	Property (prop) wagon	22 " "

Coach #70 "Connecticut" Coach #72 "Minnesota"
" #71 "Indiana" " #73 "Michigan"

SECOND SECTION

Stock car # 13—Baggage horses
" " # 14— " "
" " # 15— " "
" " # 16— " "
" " # 17— " "

Flat car #126	Wagon	# 43	Big top center poles (wagon 40 feet long, poles longer)	
	"	#1220	Train light plant	12 ft. long
Flat car #116	"	#119	Side show panel wagon	20 " "
	"	#115	Side show canvas	18 " "
	"	#120	Side Show panel wagon	20 " "
	"	# 36	Performers rigging	15 " "
Flat car #117	"	# 24	Bible back wagon	14 " "
	"	#200	Automobile wagon	18 " "
	Truck	#135	Mack tractor	
Flat car #118	Bus		Personal bus	16 " "
	Wagon	#114	Light Dept. baggage	16 " "
	"	# 64	Wardrabe	16 " "
	"	# 25	Bible back wagon	14 " "
Flat car #119	"	#202	Midway lunch stand	14 " "
	"	# 56	Property (prop) wagon (wild west)	16 " "
	"	# 40	Big top side poles & rg.	17 " "
	Truck	#133	Mack tractor	
Flat car #120	Wagon	# 57	Property wagon	22 " "
	"	# 37	Big top canvas wagon	21 " "
	"	# 42	Big top canvas wagon	21 " "
Flat car #121	Wagon	# 39	Big top stake & chain	16 " "
	"	#141	Automobile wagon	19 " "
	Truck	#137	Mack tractor	
	"	#129	Mack tractor	
Flat car #122	Wagon	# 58	Property wagon	26 " "
	"	# 49	Ring Stk. canvas & poles	21 " "
	"	#125	Trunk wagon	16 " "
Flat car #123	"	# 50	Backyard stake & chain	16 " "
	"	# 30	Carp. Shop & ring curbs	15 " "
	"	# 38	Big top stake and chain	16 " "
	"	#112	Power generator wagon	16 " "
Flat car #124	"	#113	Light dept. wagon	16 " "
	"	#110	Power generator wagon	16 " "
	"	# 45	Big top red qrter. poles	32 " "
Flat car #125	"	# 44	Big top blue " "	35 " "
	Truck	#134	Mack tractor	

Coach #74 "Illinois" Coach #77 "Nebraska"
" #75 "Florida" " #78 "Maryland"
" #76 "Wisconsin" " #79 "Alabama"

THIRD SECTION "The Lumber Train"

Stock car # 18—Baggage horses
" " # 19— " "
" " # 20— " "
Baggage car # 32—Supplies and extra equipment
" " # 33— " " " "

Flat car #101	Wagon	#101	Wardrobe	18 ft. long
	"	# 63	"	16 " "
	"		Spec float	
	"	# 94	— GAGE (sea lions)	16 " "
Flat car #139	"	#201	Gandy wagon	18 " "
	"	# 61	Trunk wagon	17 " "
	"	# 23	Bible back wagon	14 " "
		# 93	— GAGE (sea lions)	16 " "
Flat car #138	"	# 41	Property wagon	17 " "
	"		Ford	
	"	#123	Red ticket wagon	18 " "
		# 20	Grandstand chair wagon	19 " "
Flat car #137	"	# 65	Wardrobe	16 " "
			Clown taxi	
	"		Zacchini's cannon	
Flat car #136	"	#122	White ticket wagon	18 " "
		# 86	Giraffe den	16 " "
	"		Spec float	
	"	# 35	Bible back wagon	15 " "
	"7	# 99	Dog wagon	16 " "
Flat car #135	"	# 51	Trunk wagon	19 " "
	"	# 17	Blue seat planks	13 " "
	"	# 16	" " "	13 " "
		#142	Grandstand chair wagon	21 " "
Flat car #134	Wagon	#111	Power generator wagon	16 " "
	"	# 27	Bible back wagon	14 " "
	"	# 26	" " "	14 " "
	"	# 54	Stage wagon	21 " "
Flat car #133	"	#118	Band Dept.	16 " "
	"	# 55	Property wagon	18 " "
	"	# 48	Ring stock Dept. wagon	16 " "
	"	# 59	Trunk wagon	19 " "
Flat car #132	"	# 21	Bible back wagon	14 " "
	"	# 52	Trunk wagon	14 " "
	"	# 22	Bible back wagon	14 " "
	"	#143	Grandstand chairs	21 " "
Flat car #131	"	# 34	Grandstand stringer wgn.	33 " "
	"	# 19	Grandstand chairs	19 " "
Flat car #130	"	#153	Ring curbs and stages	20 " "
	"	# 29	Seat jack wagon	20 " "
	"	# 28	" " "	20 " "
Flat car #129	"	# 33	Blue seat stringer wagon	30 " "
	"	# 32	" " " "	30 " "

Flat car #128..... " # 18 Grandstand chair wagon 19 " "
" #100 Amplifier wagon 12 " "
" # 66 Trunks 18 " "
" # 60 " 19 " "
Flat car #127..... " # 31 Grandstand stringer wgn. 33 " "
" #130 Seat jack wagon 20 " "

Coach #94 "Atlanta"
" #95 "New Orleans"
Coach #96 "Portland"
" #97 "Pittsburgh"

FOURTH SECTION (No flat cars)

Stock car # 21—Ring stock horses
" " # 22— " " "
" " # 23— " " "
" " # 24— " " "
" " # 25— " " "
" " # 26—Camels, zebras, llamas, buffalo, etc.

Coaches (executives and Performing personnel)
81 "Louisville"
82 "Des Moines"
83 "St. Louis"
84 "Cleveland"

Stock car # 27—Camels, zebras, llamas, buffalo, etc.
Bull car.... # 28—Elephants
" " # 29— "
" " # 30— "

85 "New York"
86 "Worchester"
88 "Los Angeles"
89 "Seattle"
90 "Washington"
91 "San Antonio"
#100 "JOMAR" (John Ringling's private car)

Grand totals—40 Flat cars
23 Stock cars
27 Coaches (incl. 2 advance cars)
—
90 Railroad cars

CIRCUS

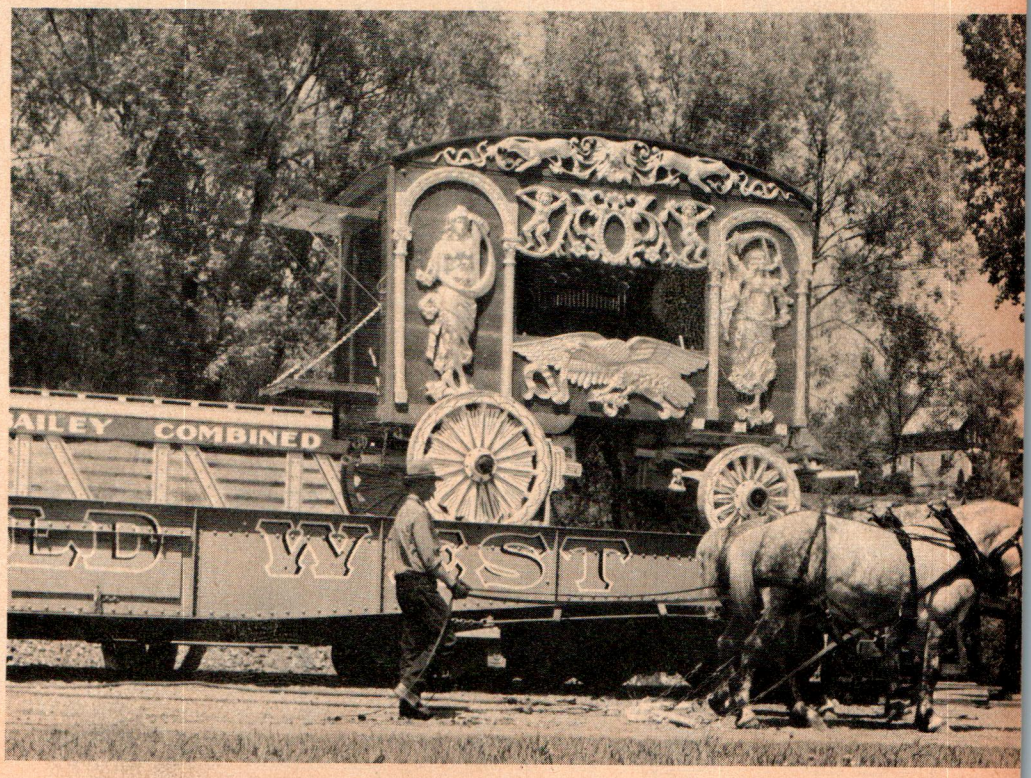
Timing and Loading

About 5:30 p.m. the cookhouse serves the last evening meal, and begins to pack up. Shortly after, the baggage horses are hitched into teams to begin the evening's loading job, and their stable tents (baggage stock canvas,) are themselves loaded. Immediately upon the start of the evening performance, the wild animal cages are removed from the menagerie tent, and sent to the runs, and the menagerie "top" is torn down and loaded. Thus, even before the evening performance has come to a conclusion, the first section or "Flying Squadron" is loaded, and usually actually on its way to the next city. With the conclusion of the night show, the audience walks out upon a strangely empty space, where, when they had entered, there had been a lively midway and a wild animal menagerie. Only the side show remains, seeking to lure in a few more customers for the final side show performance, or "blow off." Even before everyone has left the big top, the noise of workmen folding and stacking chairs commences. Rigging and props of the big show had been loaded into wagons as they were carried out of the tent after each act.

What actually composes the Third section, is loaded next. The third section carries the nickname "lumber train" because of the amount of seat lumber in evidence upon it — blue planks, bible backs, stringers, jacks, chairs, ring curbs, stages, properties, etc. These must all be cleared from the interior of the big top before the big canvas and its poles can come down. The third section also carries a few performing animal cages which are not loaded on the first section because they must wait their turn in the big show. Property wagons, "spec" floats and Zacchinni's cannon also indicate in the loading order, the relative time at which the performance is terminated—Zacchinni, the "human projectile" was the last act of the show. Then comes the flood of lumber wagons as the big top is emptied. But there is no place for the lumber to go, at the next town, until the big top is in place—yet, the big top and its center poles are the last items loaded at night. Therefore, the loaded third section is side-tracked, while the cars for the second section are loaded.

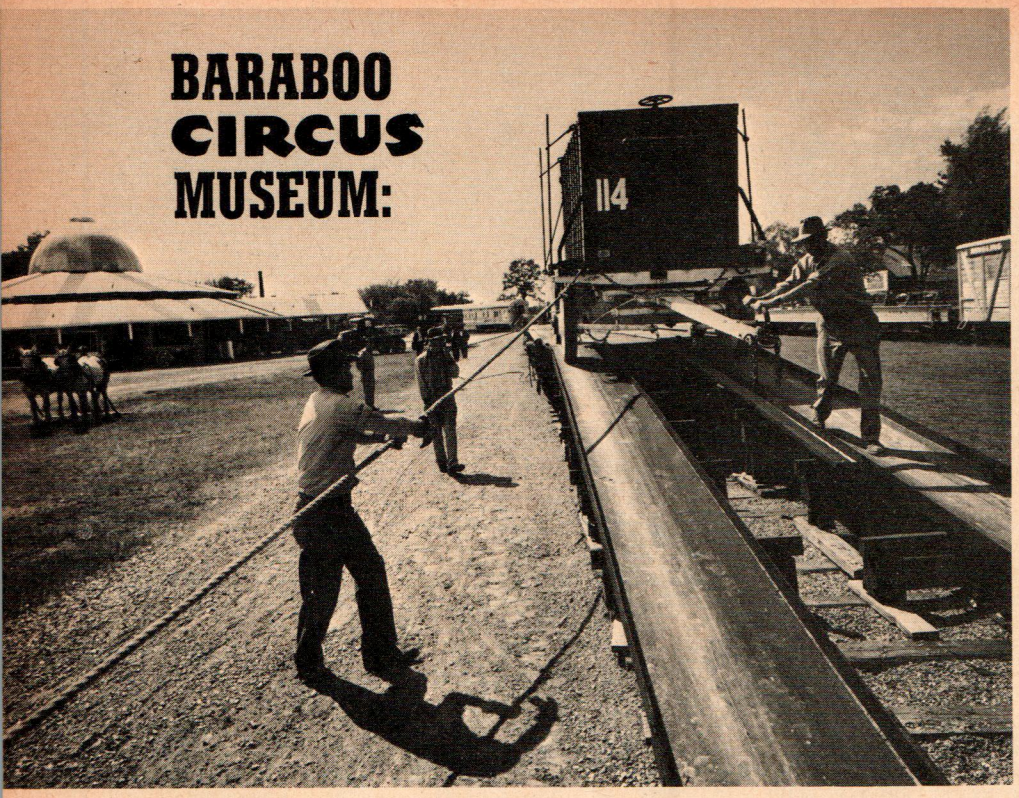
Now, the side show has entertained the last of the night crowd, is loaded and sent to the train. Similarly the big top quarter poles, various trucks, cars, light plant generators, and the rolls of canvas. The last piece of equipment to leave the showgrounds are the 55 foot big top centerpoles. The big pole wagon is loaded on flat number 126. The small train light plant, furnishing lights for the entire loading operation, is loaded at the very last, barely fitting onto flat #126, behind the huge center poles. Flat car number 126, the last to be loaded, is then switched around to the front of the second section so as to be quickly off the runs the next day for an early start at erecting the huge big top. The second section is now loaded. It is about 1:30 or 2:00 a.m., and the second section starts on its way to the next town. Following shortly behind, the third section pulls off of its siding where it had waited since loading, and follows along behind the second section.

There is no particular hurry about the fourth section. It carries the aristocrats of the horses, the ring stock—also big show brass such as executives, performers, and musicians. The elephants are here too—they do not leave the old town until everything is loaded. their presence being insurance against mud. If there is a long haul ahead, or rain and mud reported at tomorrow's stand, the fourth section may be rushed a bit, or a carload of working elephants hooked onto the second section to reinforce the forces needed to combat mud on the next showgrounds—but normally, the fourth section moves with leisure in keeping with the aristocracy it carries.



Below, side view of No. 55 Una-Fon Wagon. Unit is bright red with silver carving, white wheels trimmed with red, yellow end numbers with white.

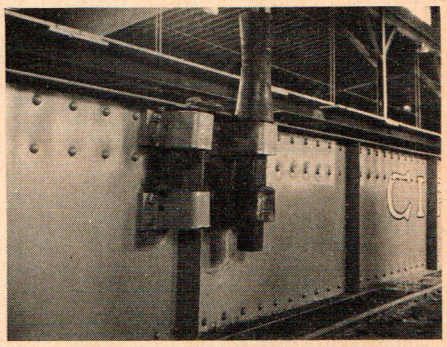
BARABOO CIRCUS MUSEUM:



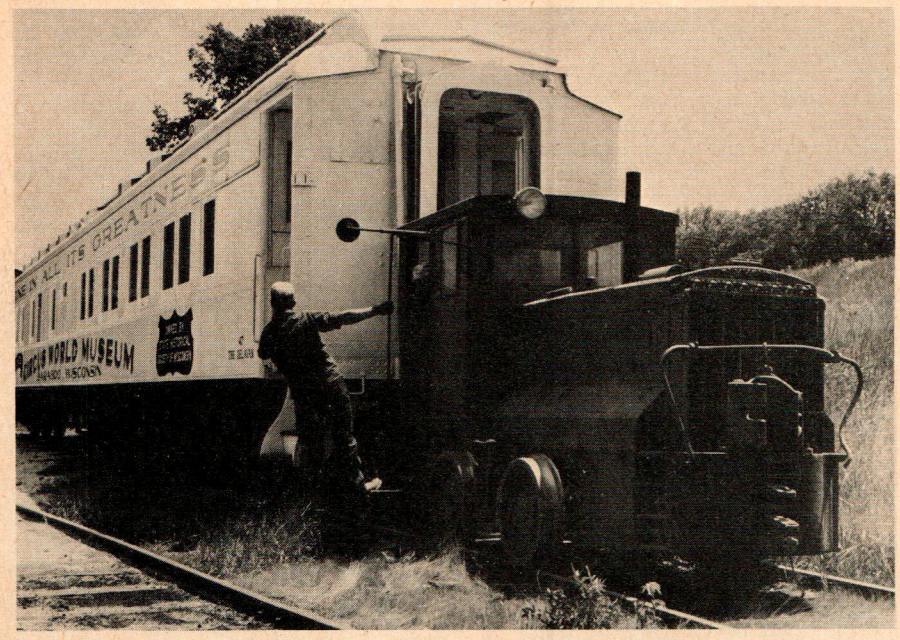
Roustabouts, above, unload a wagon from a flat car with the help of horses and a long movable ramp. Wagons came from many different circuses.

Below, Plymouth switcher shunts Delavan Pullman into position. Former Pullman DOver Bay, car is now white, silver roof, and black underbody.

Plymouth switcher keeps busy shunting cars on the Circus World Museum property. Santa Fe 1407 diner Janesville is now red with silver roof and black underbody; was donated by the road.



Stake pockets bolted securely to car sides are an aid in pulling wagons on and off by means of heavy ropes and teams of horses or tractor.



TELEVISION and other attractions of the 1950 era took their toll of the railroad circus. Gone were such names as Sparks, Al. G. Barnes, Gollman Brothers, and Cole Brothers. Even the giant Ringling Brothers show had merged with Barnum & Bailey during the decades preceding. A few railroad shows that started fresh last for a season or two and vanished.

At Baraboo, Wisconsin; a group of circus buffs had established the Circus World Museum, providing a haven for the colorful equipment of yesteryear. Highlighting this mecca was a newly established "Day In Old Milwaukee", complete with circus parade.

Not long after the 1964 parade was held, and all equipment returned to Baraboo by truck convoy, word was received that a circus train was for sale. If the museum could acquire this train, it would pick up not only some rare and rapidly disappearing types of railroad equipment, but would also be in a position to transport its equipment to Milwaukee in the grand old tradition—by rail.

The train was an old fashioned circus train. There were 12 of the special flat cars and a stock car such as the big tent shows used to use. The cars were 70 to 72 feet long, 30 feet longer than system cars and designed for end loading of the massive circus wagons.

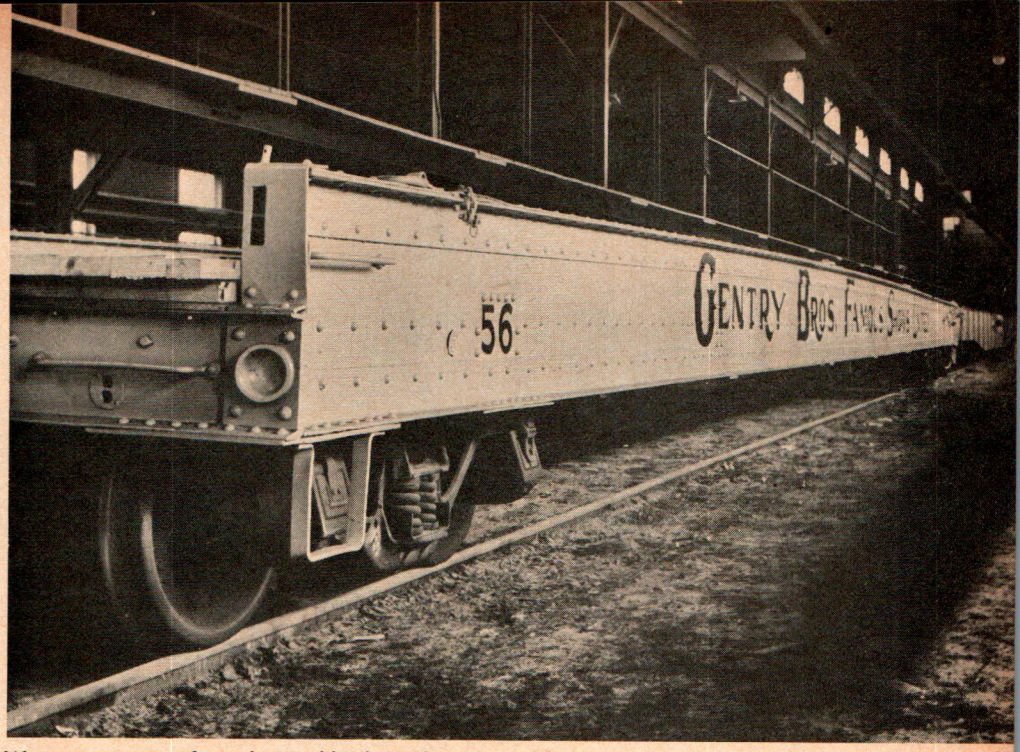
There were reasons for this. The railroad charge for pulling circus trains was on a per car mile basis. The longer cars accommodated the 65-foot tent poles and enabled the big circuses to load more wagons and other equipment on each car.

Nowadays, the Ringling Circus (the only one on rails) uses tunnel cars which resemble ordinary passenger or baggage cars.

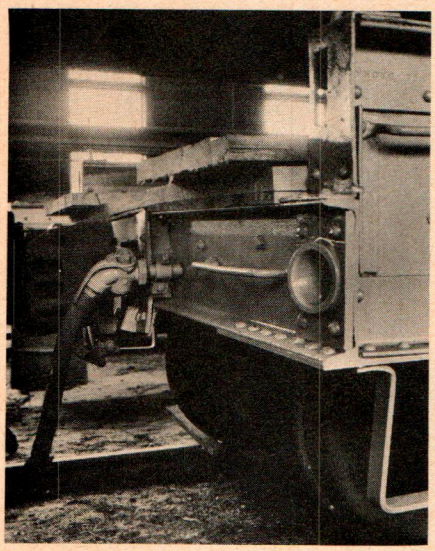
The Jos. Schlitz Brewing Company bought the stock car and 12 flat cars at a bankruptcy sale in North Carolina, had them brought to Baraboo and gave them to the museum. It was evident that the carnival which had owned them last had not kept them up well.

Fortunately and by pure coincidence, the Circus World Museum had just been given some huge railroad car shops in Baraboo where these cars could be put in good shape. The shops, like the museum site and buildings, had once belonged to the Ringling Bros. Circus and had been used to do winter maintenance and repair work on the Ringling show train.

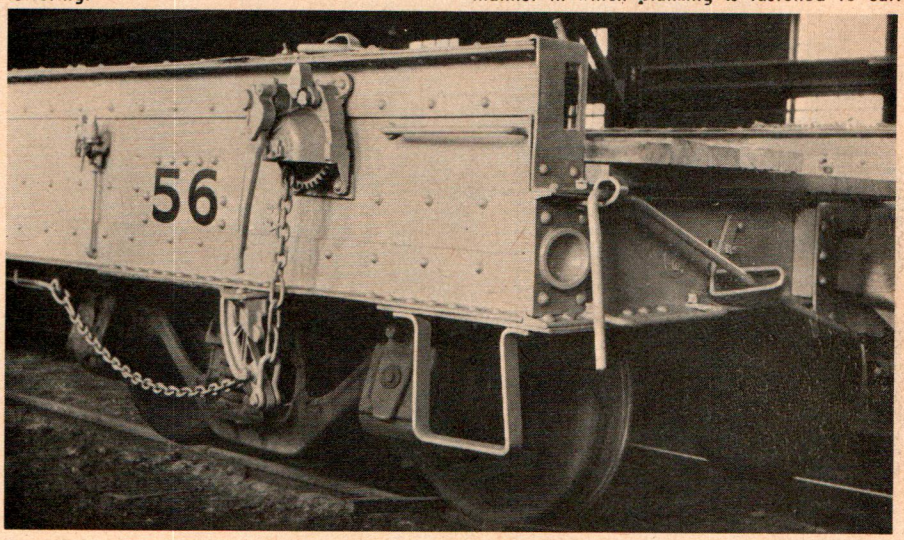
End detail of Car. 56 shows plainly the type of steel girder construction used in Warren type car. Inclusion of all gears, chains, rivets, and other intricate detail is a model must.



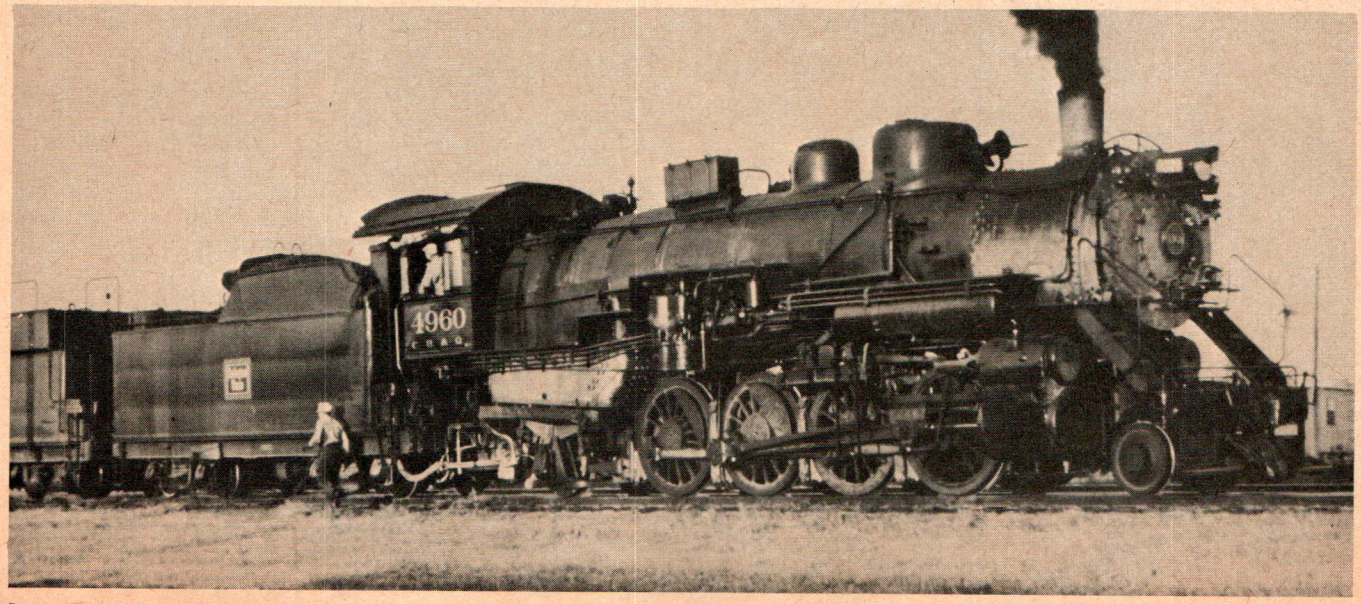
Warren type car, formerly World of Mirth No. 23 is now decked out as Gentry Bros. in yellow with green letters on one side; W. C. Coup on opposite side with silver and blue lettering.

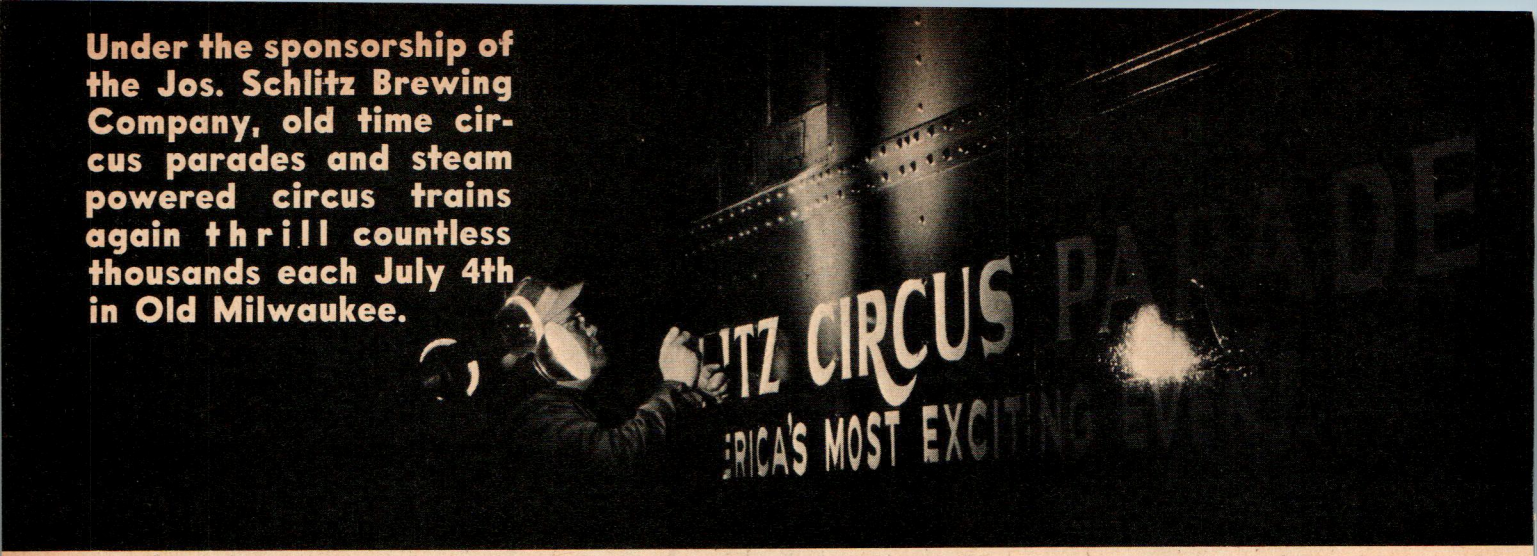


End view detail of flat car shows clearly the manner in which planking is fastened to car.



Burlington Mikado 4960 will haul the 1966 Circus Special from Baraboo to Milwaukee, as she did in 1965. 1923 Baldwin built hog is class 0-1a.





The Ringlings moved to Bridgeport, Conn., in the fall of 1918 to the winter quarters of the Barnum & Bailey Show which they also owned. Their Baraboo railroad quarters were sold tothe North American Car Corp.

This firm, having finally ceased operations in Baraboo, donated the shops to the museum in the fall of 1964, just in time for work on the old-new circus train. Shortly afterward there were some other gifts for the circus train.

The Pullman Co. donated a combination sleeper-lounge car and a combination sleeper-observation car. They They needed thorough cleaning and repainting but were otherwise in good condition. The Santa Fe donated a diner. It had been in regular use until about 1961.

The Schlitz Company, which had paid for restoration work on the circus wagons for the parade, was willing to meet the cost of putting the cars in top shape and painting them up to outshine any circus train that ever rolled the rails.

One by one, the cars were carefully overhauled and repaired. New decking replaced rotted wood on the flat cars. Heavy steel reinforcements were welded to the sides. There must be no possible question that they would safely carry the weight of the big wagons—as much as seven tons each. Rairroad inspectors were called in to check every detail.

The flat car and stock cars were then painted in the particular colors and lettering used by famous circuses. Some carried the name of one great circus on both sides; others carried the name of a different show on each side. Preference was given to Wisconsin circuses, of which there have been more than 100.

One of the lounge-sleeper cars was painted brilliant red and boldly lettered in gold and white with the name of the Circus World Museum. The other sleeper-lounge-observation car was done in bright blue, with silver trim and lettering, as the "Schlitz" car. The diner became the "Wisconsin" car, done in white, with lettering and illustration proclaiming the state's attractions for tourists and vacationists.

CIRCUS PARADE LTD CONSIST

Note: Six of the flat cars are lettered the same on both sides—and carry the authentic colors and lettering of the six largest "railroad" shows. The remaining 10 flat cars (Nos. 56-65), and the stock car, carry different—though authentic, lettering on each side, so that the train can display as many old-time titles as possible.

World of Mirth No.	Circus World Museum No.	Lettering	Color—(Numbers indicate Rust Oleum colors)
		STOCK CAR (lettering different on each side)	
11	49	Hagenbeck-Wallace Sells Bros. Millionaire Confederation of Stupendous Railroad Shows	Orange car (1151) White letters Blue outline
		FLAT CARS (both sides lettered identically on Nos. 50-55)	
61 (Mt.V)*	50	Al G. Barnes Circus	Orange (1151) Silver letters Green outline
81 (Mt.V)*	51	Christy Bros. Big 5 Ring Wild Animal Circus	Dk. Orange (H-25) Black letters No shade or outline
19	52	Gollmar Bros. Enormous New Shows	Red (1210) White letters Shading Dark and Light Blue
57	53	Ringling Bros. and Barnum & Bailey Combined Circus	Silver (470) Red letters White outline
37	54	The Great Sells-Floto Shows Consolidated	White (2766) Red letters White outline
49	55	John Robinson 10 Big Shows Combined	Orange (1151) Letters White Blue outline
		(lettering different on each side for Nos. 56-65)	
23	56	Gentry Bros. Famous Shows United W. C. Coup New United Monster Shows	Yellow (H-18) Green letters No outline or shading Yellow (H-18) Silver letters Outlined in Maroon
24	57	Robbins Bros. 3 Ring Circus with Hoot Gibson The Screens most popular Western Star 101 Ranch Real Wild West	Orange (1151) Red letters White shading Orange (1151) Purple letters White outline and Black inside shading
18	58	The Burr Robbins New Consolidated Railroad Shows Ringling Bros. World's Greatest Shows	Red (1210) Silver letters Shaded light Blue Red (1210) White letters No outline or shading
66	59	Buffalo Bill Wild West and Pawnee Bill Great Far East Show The Great Adam Forepaugh and Sells Bros. Shows United	Silver (470) Green letters No outline or shading Silver (470) Blue letters Shaded in White & light Blue outline
63	60	Walter L. Main All New Monster Shows Barnum & Bailey Greatest Show on Earth	Yellow (H-18) Blue letters No outline or shading Yellow (H-18) Red letters Black outline
25	61	Cole Bros. with Clyde Beatty and Ken Maynard Sparks Circus	Silver (470) Red letters silver shade outline in Blue Green Dk. Orange (H-25) White letters No outline or shading
91 (Mt.V)*	62	Clyde Beatty Circus Sun Bros. World's Progressive Shows	Silver (470) Red letters Shaded Blue Yellow letters Outlined in Red
21 (Mt.V)* (Run Car)	63	The Mighty Haag Shows W. W. Cole's Great New York & New Orleans Zoological and Equestrian Exposition	Dk. Orange (H-25) White letters outlined in Blue Silver letters shaded in Red
1 (Mt.V)*	64	The Greater Norris & Rowe Show Howes Great London Circus with Van Amburghs Trained Wild Animals	Red (1210) Yellow letters outlined in Dark Orange White letters outlined in Gold
41 (Mt.V)* (Run Car)	65	W. H. Horris New Nickle Plate Shows Yankee Robinson 3 Ring Circus	Blue (721) Orange letters outlined in White Orange letters shaded in White

Note: *Mt.V. indicates built by Mt .Vernon Car Manufacturing Co., Mt. Vernon, Illinois. Four (Nos. 50&51, 63&65) of the six Mt. Vernon cars are equipped as "run" cars to be used by the Circus World Museum as "end cars" for loading and unloading. Other flat cars will be coupled between these cars in the train consist.

Flats #52 through 61 were built by Warren Car Manufacturing Co., Warren, Pennsylvania.

Consist will not necessarily be in the specific order listed. Traditional circus train consist is to couple stock car behind tender, followed by flats—with passenger cars at end of train.

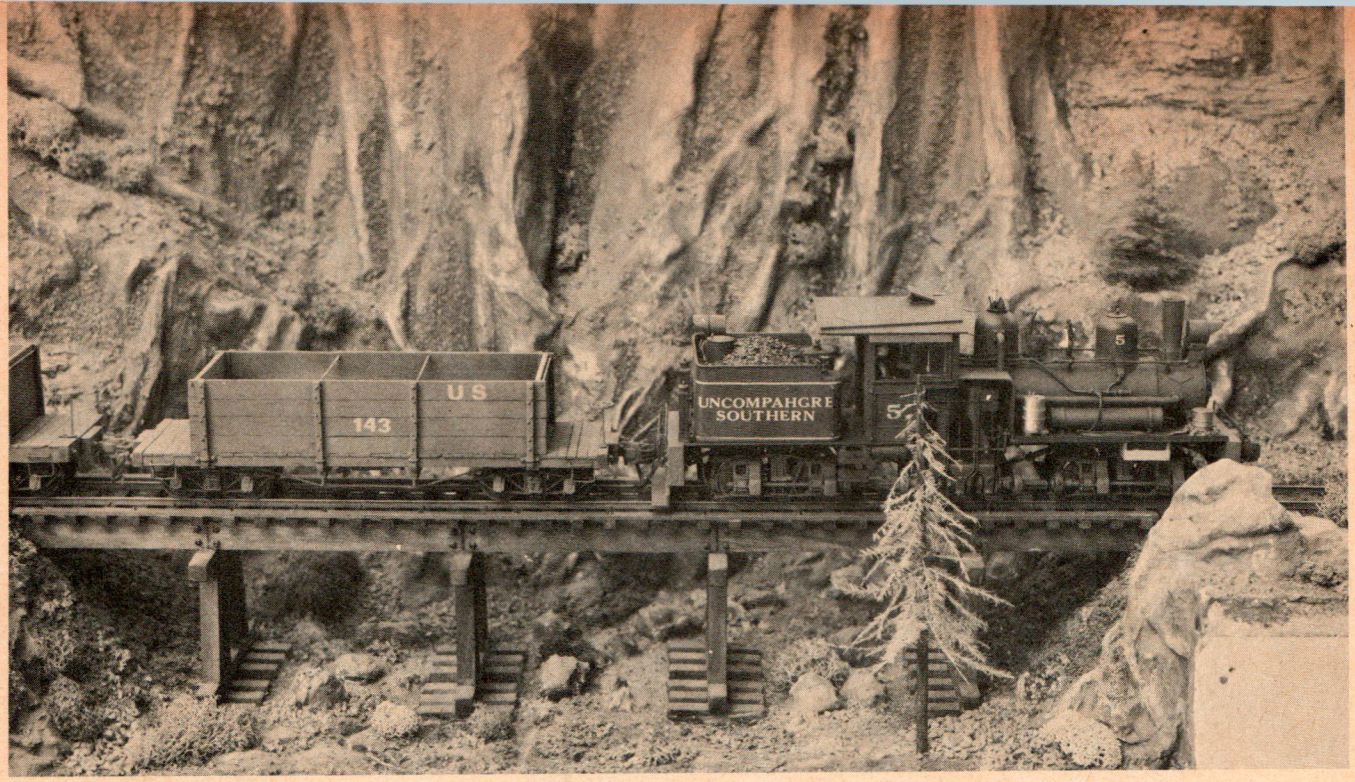
PASSENGER CARA DATA
"Circus Parade Limited"

Diner—"The Janesville"
Formerly Atchison, Topeka & Santa Fe No. 1407. Donated to the Circus World Museum by the AT&SF. Built in 1925 by Pullman, seats 36. Length overall: 83'5". Weight: 96 tons. Was one of the 19 1400-series AT&SF diners. Basic "Circus Parade Limited" colors: sides and ends, red; roof, silver; underbody and trucks, black.

Sleeper-Buffet-Lounge — "The Delavan"
Formerly the Dover Bay, built by Pullman in 1925, acquired by the Circus World Museum in 1965. Has six double bedrooms, a buffet and a 14-seat lounge. Was one of nine "Dover" series cars, three of which were owned by the New York Central, six by the Michigan Central. Basic "Circus Parade Limited" colors: sides and ends, white; roof, silver; underbody, black.

Sleeper-Lounge-Observation — "The Baraboo"
Formerly the Monte Baldo, built in 1925 (and owned) by Pullman, acquired in 1965 by the Circus World Museum. Was one of six cars in the "Monte" series .A true classic car, it has 10 open Pullman sections and a 14-seat lounge plus an open observation platform. Basic "Circus Parade Limited" colors: sides and ends. bright blue; roof, silver; underbody, black.

Note: All three passenger cars were named for the three Wisconsin cities that were home quarters for "railroad" circuses. Expense of acquiring, refurbishing and operating all railroad equipment for the "Circus Parade Limited" was covered by the Jos. Schlitz Brewing Co., sponsor of the celebration, "Old Milwaukee Days."

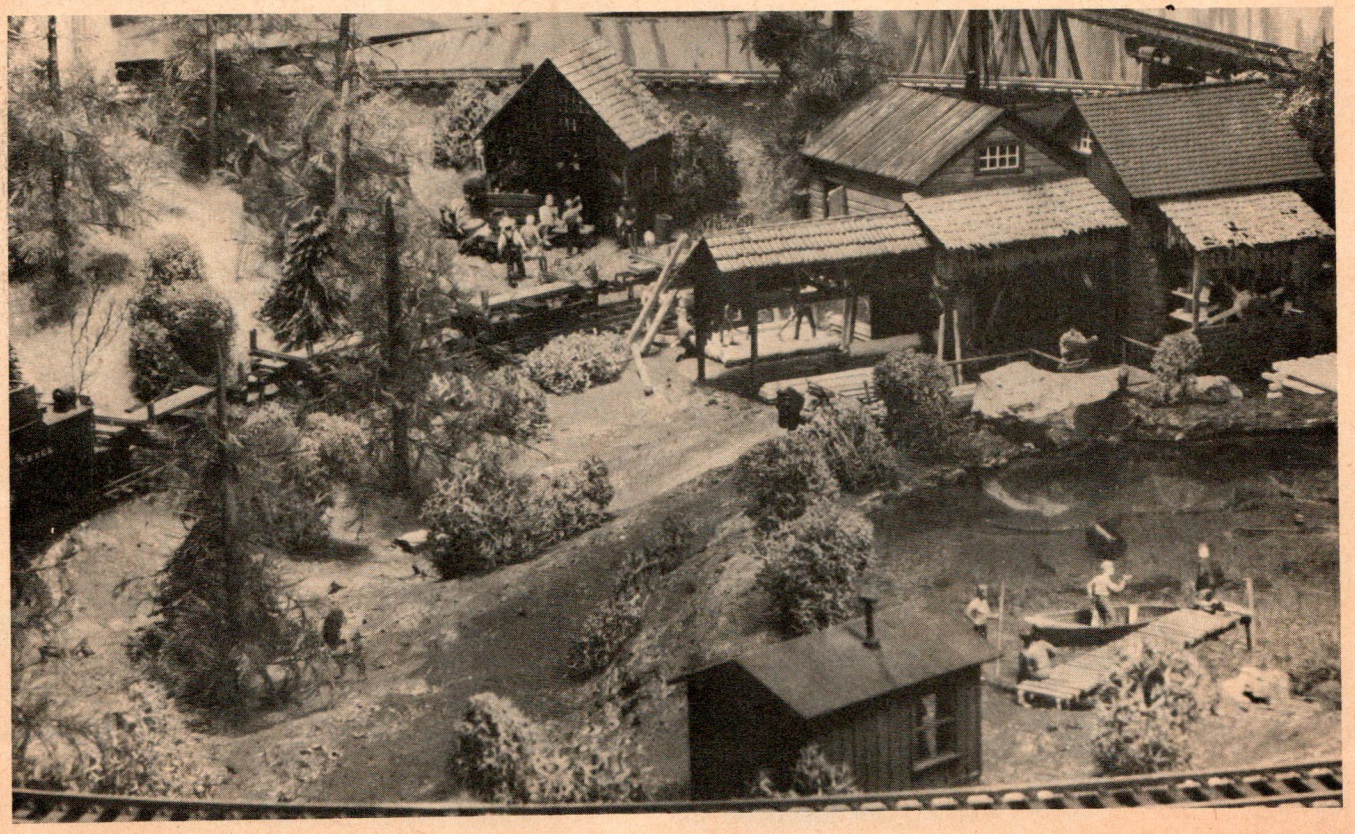


Boomer Trail

UMCOMPAHGRE SOUTHERN NO. 5, a 3 ft. gauge, 2 cylinder, 20 ton Shay, drifts across Coffey Creek with a load of empties. The 1/4" Shay was built from various Kemtron parts and won 1st in its class at the 1964 PCR San Diego convention; the work of Sheldon R. Schwedler, 1511 E. Cypress St., Phoenix, Arizona 85006. This is the type of crisp realistic modeling that stirs the imagine to improve your own road.

Photos From Our Readers . . .

BOB HUDSON'S BETHEL CREEK RR has this newly completed scenic area and the boys have just unloaded a bunch of disconnected log Buggies at the mill. Hudson is a staunch believer in using plastic and wood kits wherever it's save time, so he can enjoy other aspects of model railroading even more. We like his scenery, HO.



Automatic Train Control on the Big Dipper & Pacific

by James J. Schmidt

ATC on the Big Dipper Route allows operation on the main line, freeing the engineer to do whatever switching and operating he desires in the yard, terminal, and branch areas.

Surrounded by his HO empire, author Jim Schmidt is able to manipulate his controls in a wide variety of ways permitting either manual or automatic operation of the main line. The Big Dipper & Pacific has been built into a spare 10 by 12 foot bedroom in 3 years.

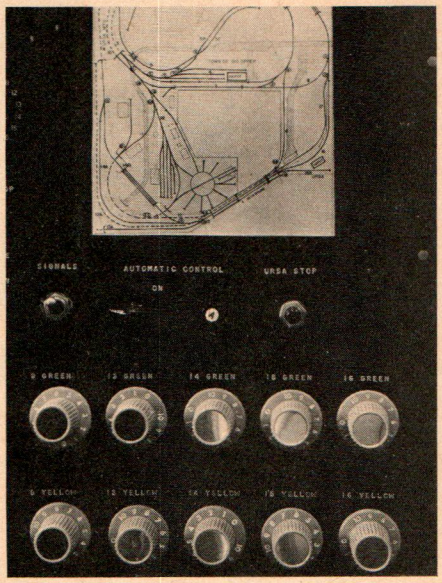
THE BIG DIPPER and Pacific RR is a small HO private pike, crammed into a ten by twelve bedroom. It is a two loop system for round and round operation. The railroad was designed for one man control. (See July 1965 *Railroad Model Craftsman.)* To increase the activity on the layout, automatic train control was installed on the outer loop to allow operation of main line service while the engineer at the controls is free to switch and run the train on the inner loop which serves the industry of the area.

The automatic train control system was to have the following features:

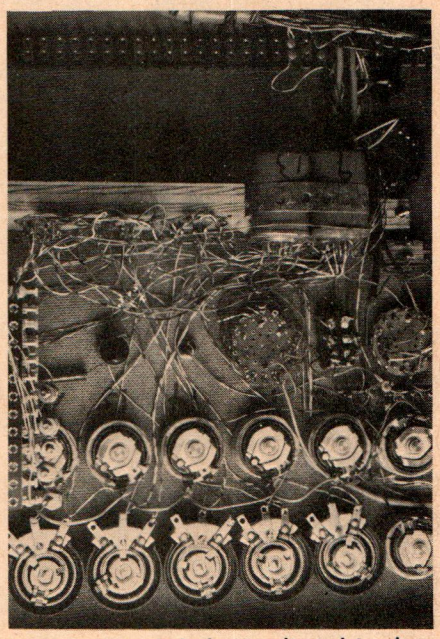
1. It must be capable of controlling at least two trains.
2. It must provide three level control: i.e. red, yellow and green.
3. It need control the trains in only one direction as traffic on the outer loop generally runs only in a counter-clockwise direction.
4. The automatic system can be locked out so as to allow manual cab control of the trains on this trackage.

As described in the previous article, the BD&P has one rail as common ground with train reversal selected by switching between a positive and negative power supply. The track is separated into blocks with a separate switch to determine whether the block will be off or controlled by Cab A or be controlled by Cab B. The outer loop for the automatic control is about 40 feet long and contains five blocks.

The Detection Circuit: The heart of any automatic train control is the detection circuit. It must sense the presence of a train in a block and throw the necessary switches (not turnouts) to stop or slow the trains in the following blocks.



Control panel for Automatic Train Control. The block numbers do not agree with those in text since they are part of integrated numbering system covering the overall railroad.



Wiring of circuit looks complicated in photo, is all color coded for easy deciphering. At bottom are yellow rheostats, green above. Diodes are mounted on terminal block at left, with the relays on top. All done step by step.

Since surplus 24 volt dc relays are fairly cheap and easy to come by, the detection circuit of figure 1 was developed to use these. A 25 volt filament transformer, also surplus, supplies the power for the detection circuit.

The final control circuit requires 4pDT contacts and a coil resistance of several hundred ohms. A surplus GE relay with this contact arrangement and a 400 ohm coil was used. The resistance of the coil is not too critical as long as it exceeds a hundred ohms. A lower value would perhaps cause the locomotives to creep and could effect any car lighting. Any diode with a voltage rating greater than 25 volts and current rating in excess of that drawn by the coil should work in the circuit. (Diode current should be greater than or equal to 25 divided by coil resistance.)

With no locomotive on the track,

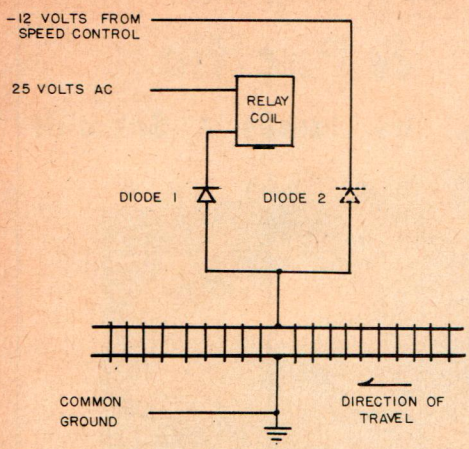
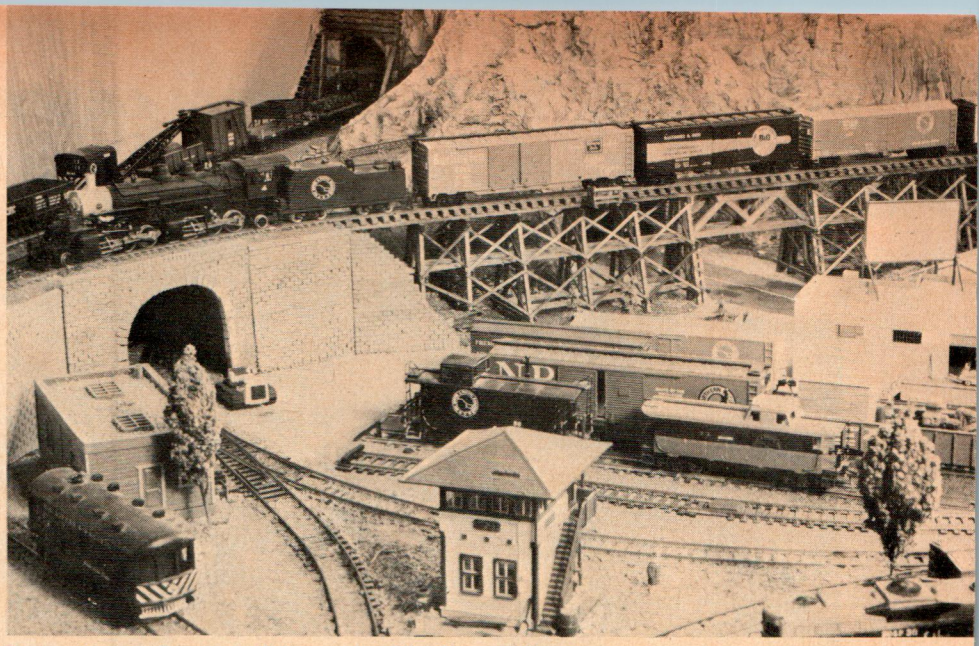


FIGURE 1.



The engineer is free to work the yards while the main line is operated by automatic train control. Workmanship is quite good.

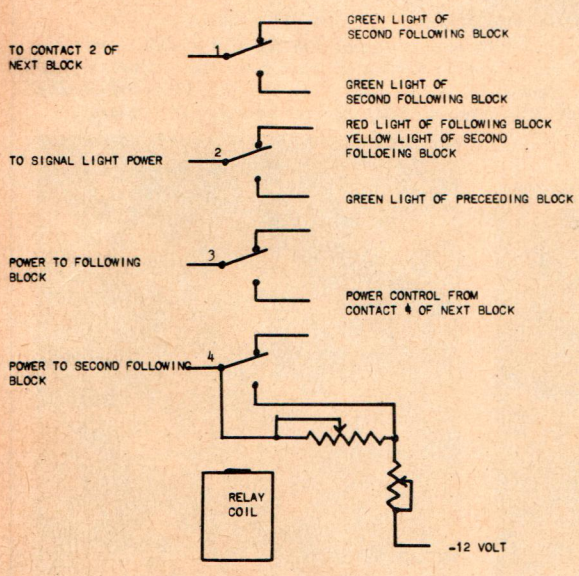


FIGURE 2.

Scenic backgrounds blend with slightly charicatured effect of mountains, giving strong western feel. Small mountain town fits in curve of loop to east of town of Big Dipper. Note signal.

no current will flow through the relay coil as the two diodes are back to back. Diode number two does not really exist in the circuit but schematically represents the rectifier in the power supply.

With a locomotive in the block, a relatively low resistance, about 20 ohms, is across the track allowing current to flow through the relay coil, closing its contacts. The high resistance of the relay coil limits the current from the detection circuit to a low value so that it will neither affect the speed of the locomotive or burn out the lights in any car.

The Control Circuit: Once the detection circuit has sensed the presence of a train, the control circuit has to perform the following functions:

1. Remove power from the following block.
2. Reduce power to the second following block.
3. Turn the signal in the following block from green to red.
4. Turn the signal in the second following block from red to yellow.

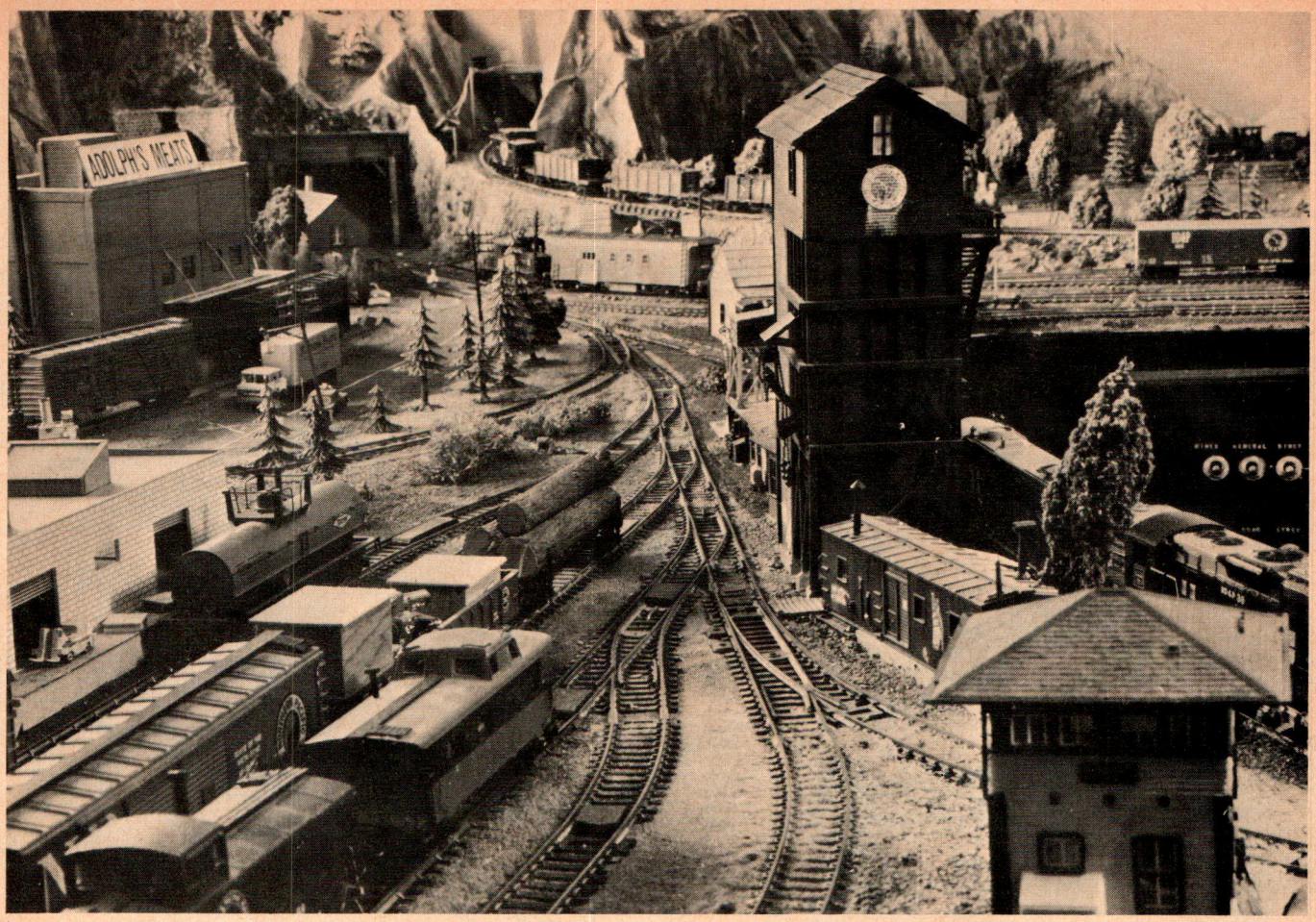
It was these four functions which dictated the use of a four pole relay.

The function of the contacts of the relay are shown in Figure 2 and the entire automatic control circuit of the BD&P is shown in Figure 3. On the loop of track, Block 1 is immediately adjacent to Block 5. The numbers in Figure 3 refer to the block that the numbered contact, control, or light affects. The Y, R, and G refer to the Yellow, Red and Green states. Thus the 1R, 1Y, and 1G lights are on the signal associated with Block 1, the 1G rheostat controls the speed of a train in Block 1 when the signal is green and the 1Y rheostat controls how much a train in block 1 will slow down.

Operation: To operate a circuit, the individual block control switches are positioned to the Cab A setting. Then the eight pole selector switch is turned to the automatic position. This turns on the 25 volt ac to the detector circuit, turns on the 10 volt ac to the signal lights, and switches the track blocks from Cab A to automatic control.

The five "Green" rheostats are adjusted for the desired speed of the trains in each block. The individual controls allow for the extra power necessary to climb grades and for slowing down through the yards. The five "Yellow" rheostats are adjusted for the slowing of the trains when the signal is yellow. Once these adjustments are made then they are seldom varied unless a locomotive of radically different speed is used on this track.

Figure three shows only one train



Yards are compact but provide ample storage capacity, along with sidings. Kadee couplers provide easy coupling, uncoupling.

Treatment of mountains is revealed in this view; given effect of far off jagged California peaks. Industries are plentiful.

on the loop, in block four. The contacts on the relay are shown in the up (energized) position for this block and the contacts, from top to bottom, do the following:

A. The first set of contacts turn off the green signal in block 2.
B. The second contact turns on the yellow light in block 2 and turns on the red light in block 3, while turning off the green light in block 3.
C. The third contact removes power from block 3.
D. The fourth contact opens the shunt around the yellow rheostat and lowers the power available to block 2.

Thus, when there is a train in block 4, a red light is on for block 3 and there is no power to the track while the yellow light is on for block 2 and there is reduced power to slow any train in that block. A second train on the loop would have the same conditions following it around the loop.

Conclusion: While the BD&P has five blocks, any number can be accomodated by inserting additional relays. Fewer blocks are not recommended as both trains would be runniing in yellow blocks most of the time.

The circuit also works best if the cars have no lights as these will trip the detection circuit. Also the cars are trailing the locomotive into a red block where there is no track power.

This circuit has been in operation on my pike for over two years and has given no trouble. It operates nicely with one or two trains and adds a lot of animation to the scene. Usually a short freight and a Doodle bug are operated on this track. Three trains have been run at one time but the effect is jerky as one train is always stopped.

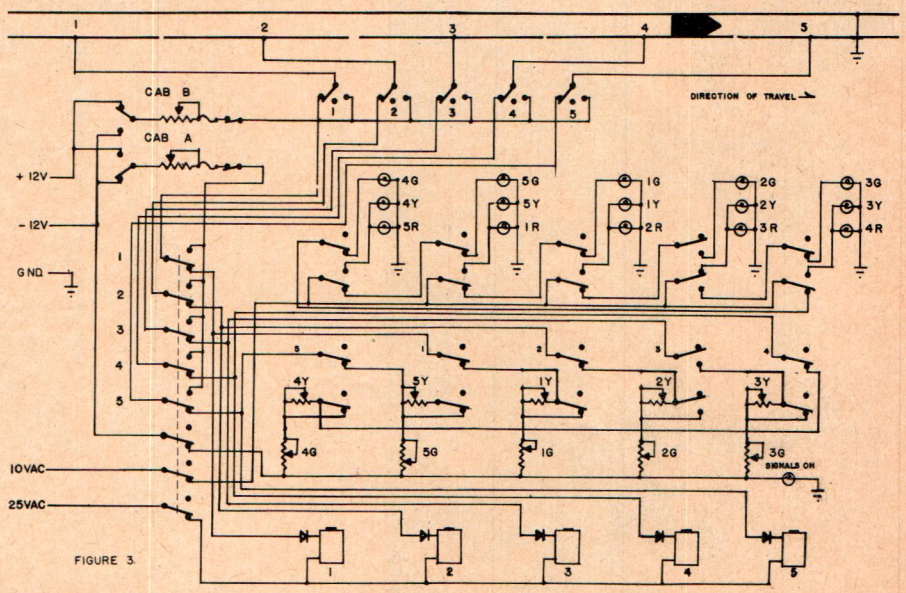


FIGURE 3.

List of Special Materials

Relays: General Electric #CR2791G123A10. Available from Herbach and Rademan, 1204 Arch Street, Philadelphia. Their catalog number TM12K542, 2 for $3.00 plus postage for 1 pound each.

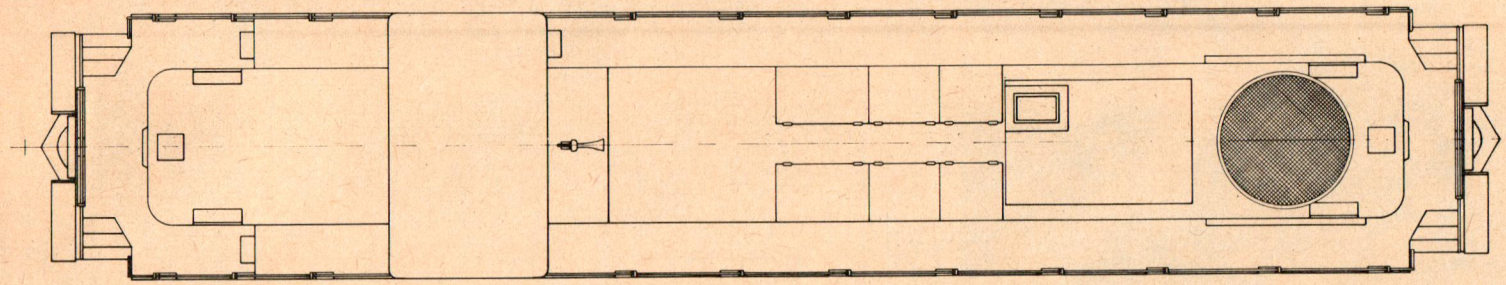
Eight Pole selector switch: Centralab PA1025, about $2.82 at any radio store.

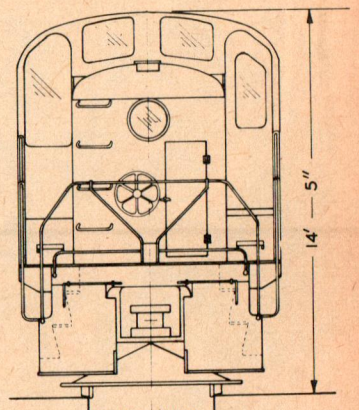
Green Rheostats: 60 ohm, 100 Watt

Yellow Rheostats: 15 ohm, 30 Watt

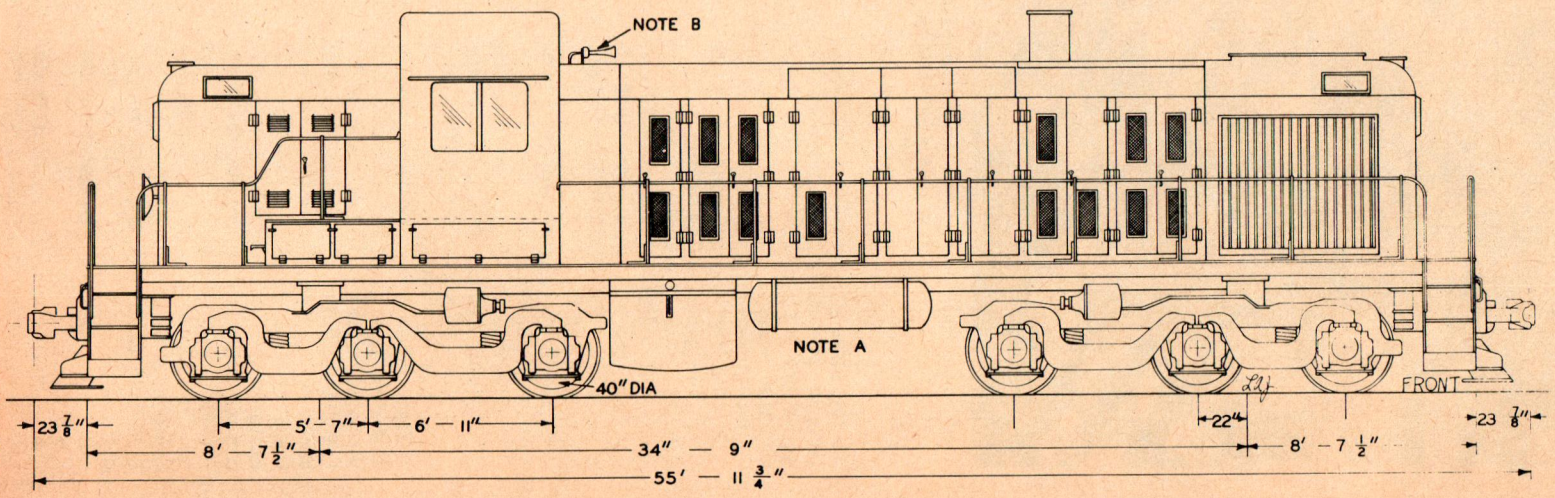
Joel Segal snapped Utah Railway No. 302 in November 1963. Six-wheel trucks permit operation on relatively light rail by dispersing locomotive weight over larger area. Loco has 1600 hp.

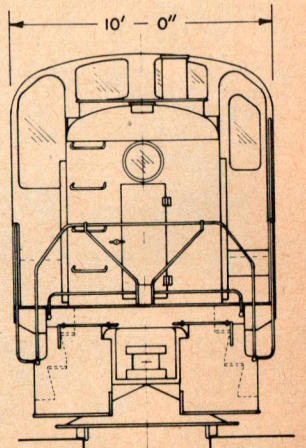
ALCO Model RSD-4 1600 HP. Road Switcher





REAR VIEW
RSD-4 & RSD-5





FRONT VIEW
RSD-4

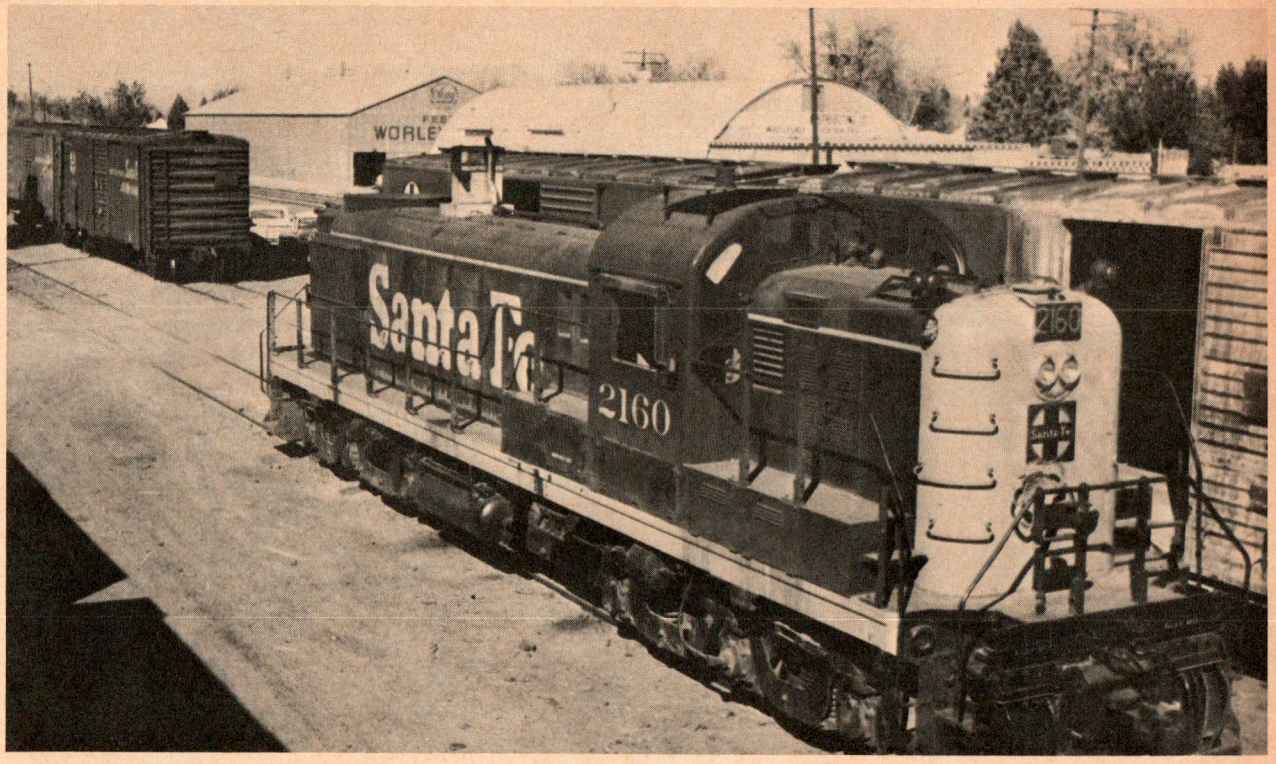
NOTE A: Units with steam generators have 800 gallon water tank behind air tanks. Some units were built with large 1600 gallon fuel tank extending behind air tanks.

NOTE B: Horn on hood facing front of unit. Units could be built with either end as front end. Some were built with dual controls.

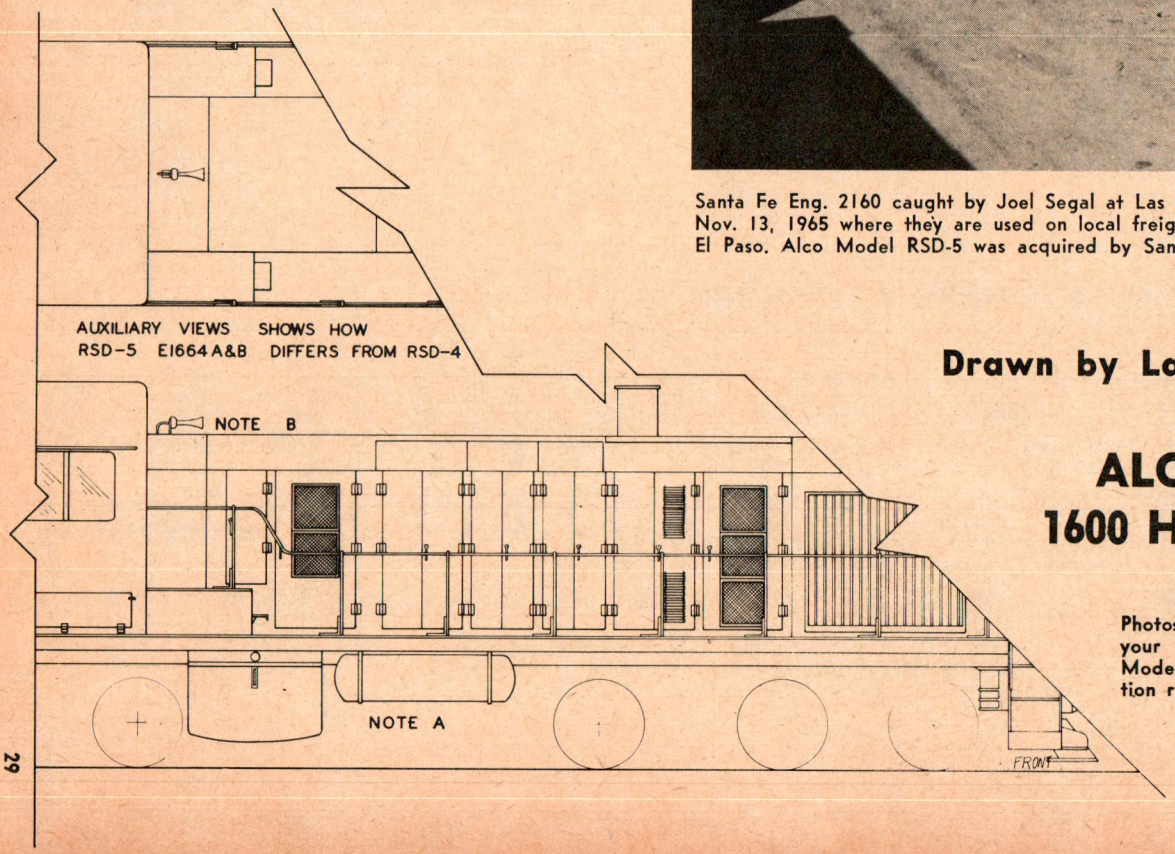
NOTE C: Main drawing covers RSD-4 only. See auxiliary view for RSD-5 external differences.

Model RSD-4 (Specification E-1663, E-1663A, and E-1663B) built 1950-1952. Model RSD-5 (Specification E-1664, E-1664A, and E-1664B) built 1952-1955.

Alco road switchers kept on getting bigger, huskier, and more powerful over the years.



Santa Fe Eng. 2160 caught by Joel Segal at Las Cruces, N. M., on Nov. 13, 1965 where they are used on local freights to Rincon and El Paso. Alco Model RSD-5 was acquired by Santa Fe 1951-53.



Drawn by Larry Jackman

ALCO Model RSD-5 1600 HP. Road Switcher

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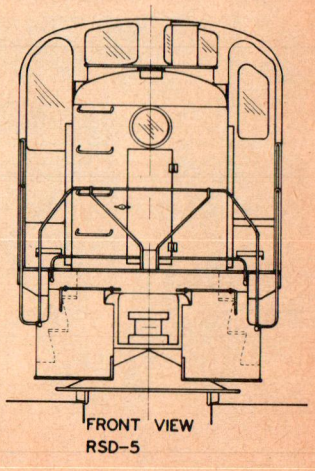
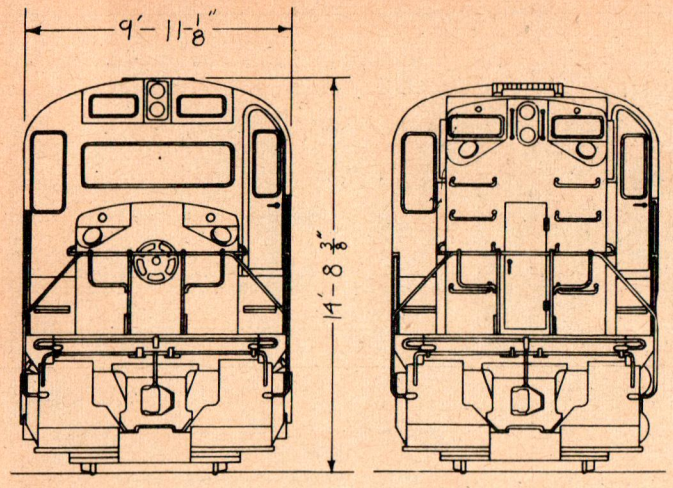
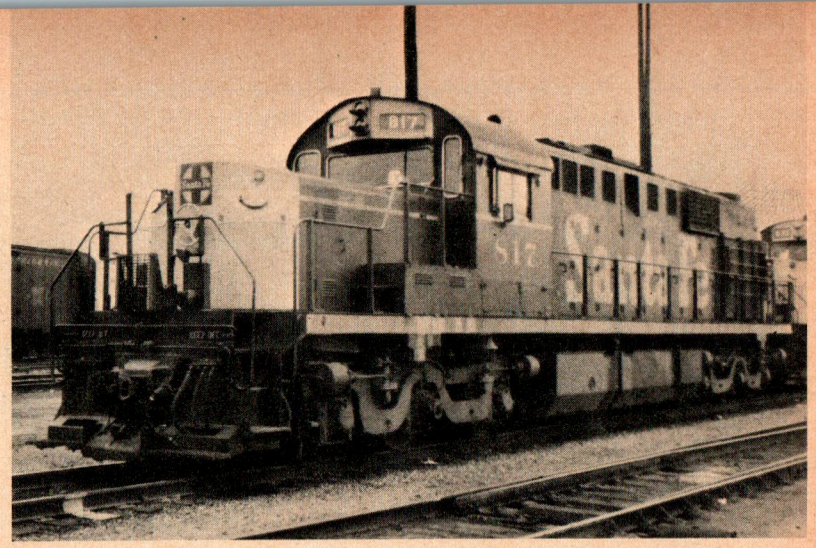




IN 1955, ALCO Products Company introduced its new DL-600B (RSD-15) road switcher, a husky C-C unit equipped with a model 251 diesel engine rated at 2400 hp.

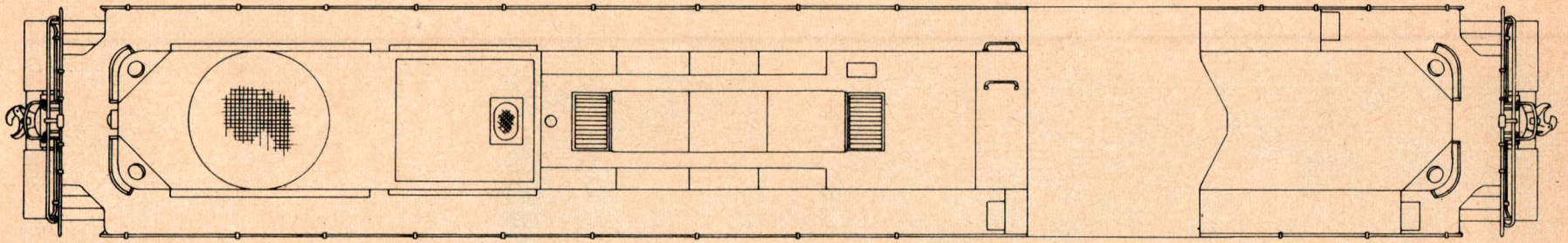
Among the railroads purchasing the DL-600B were the Santa Fe (series 602-611 and 800-849), DM&IR (series 50-55), Southern Pacific (series 4816-4818), and the Pennsylvania.

The DL-600B is easily spotted by its very long low front hood.

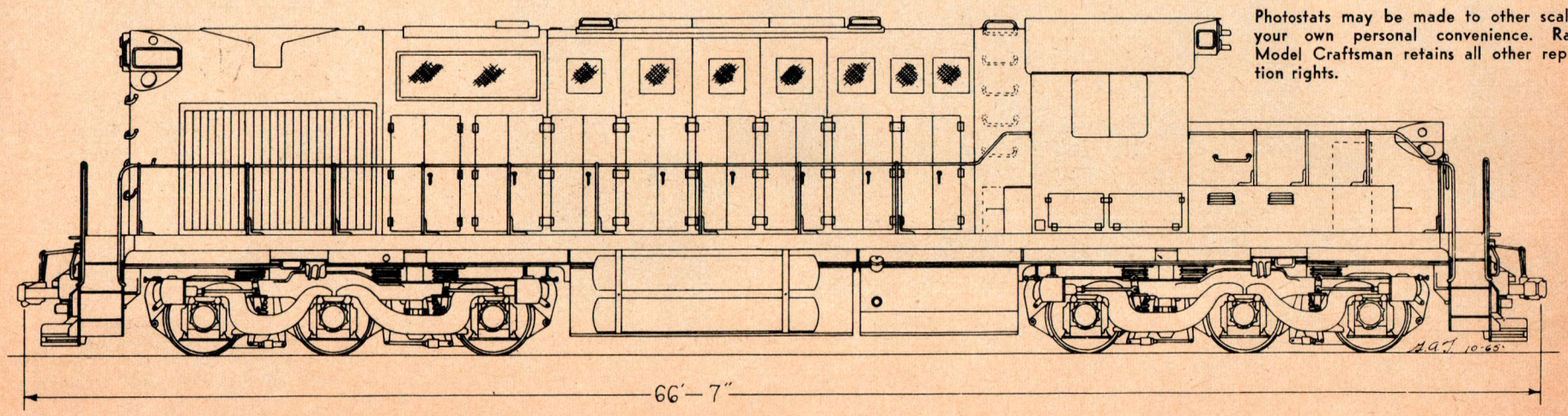


Santa Fe No. 817, Alco model DL-600B, photographed by George Trager. Long nose and six-wheel trucks give unit a very unique appearance. Loco's Model 251 diesel engine is rated at 2400 hp.

Drawn by George A. Trager



ALCO Model RSD-15 (DL-600B) 2400 hp. Road Switcher—1955



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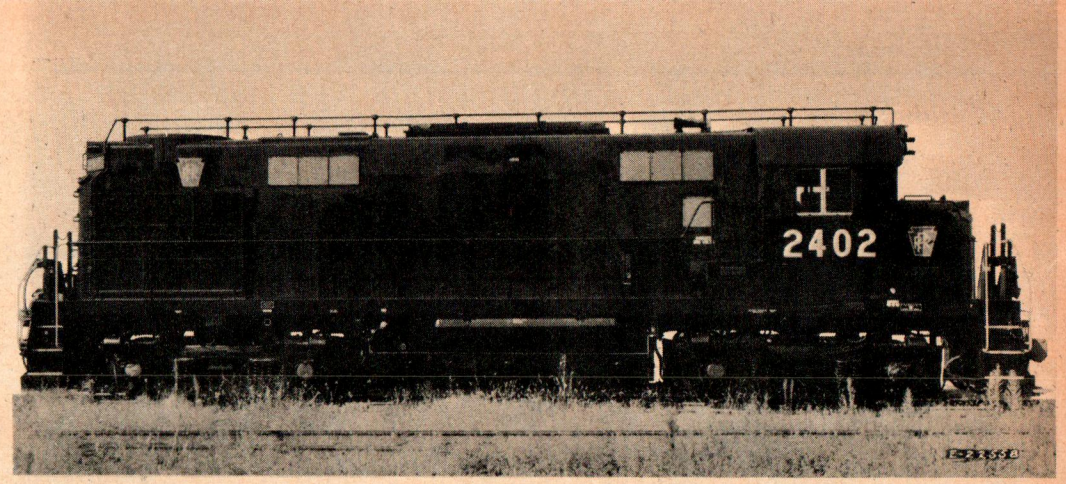
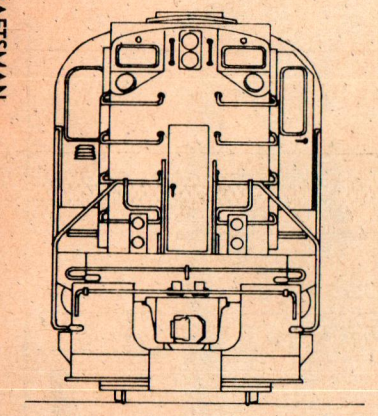
Certain distinctive family traits were retained as ALCO changed its styling, prior to introduction of its Century series in 1963.

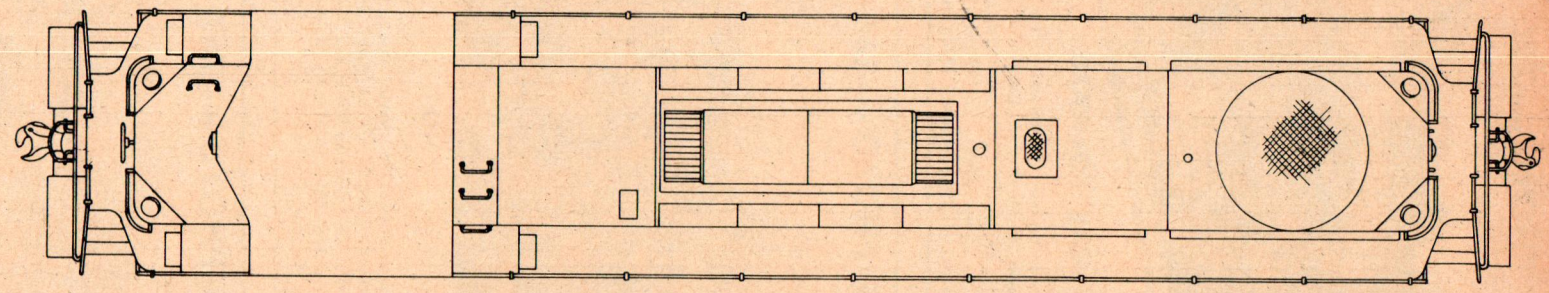


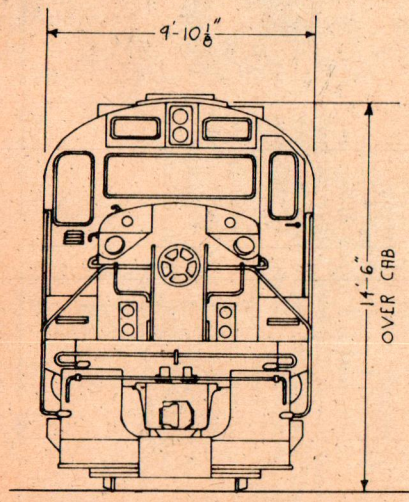
ALCO's Model DL-640 (RS-27) was introduced in 1959, and was equipped with a model 251B, 4 cycle diesel engine rated at 2400 hp. The DL-640 was the forerunner for Alco's 424 Century Model.

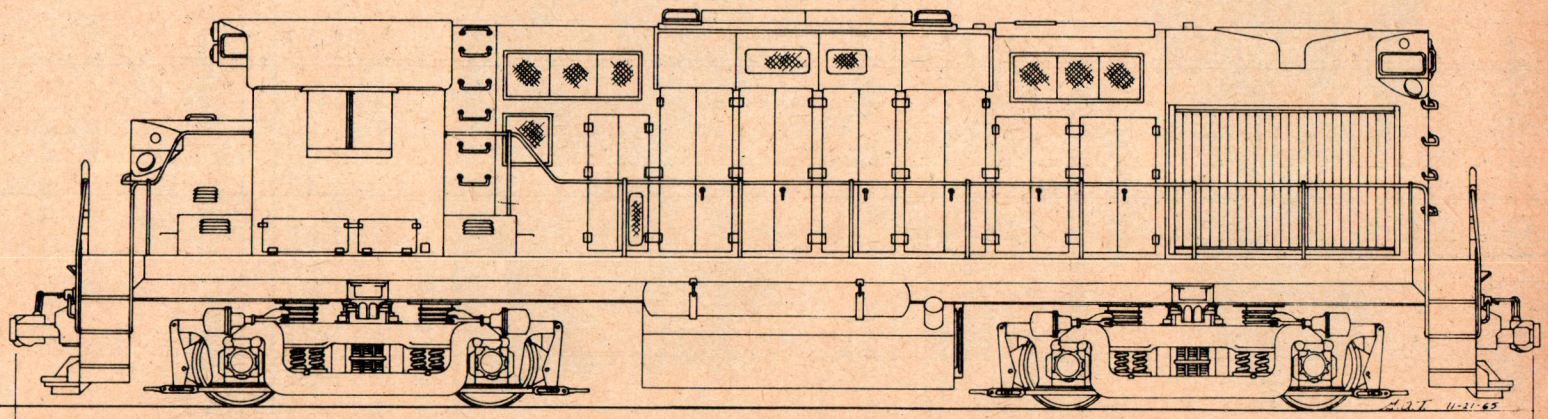
Among the railroads which purchased the DL-640 were the Union Pacific (series 675-678, ex-demonstrators), Green Bay & Western (road 310), Soo Line (series 415-416), and the Pennsylvania Railroad.

ALCO Model RS-27 (DL-640) 2400 hp. Road Switcher—1959



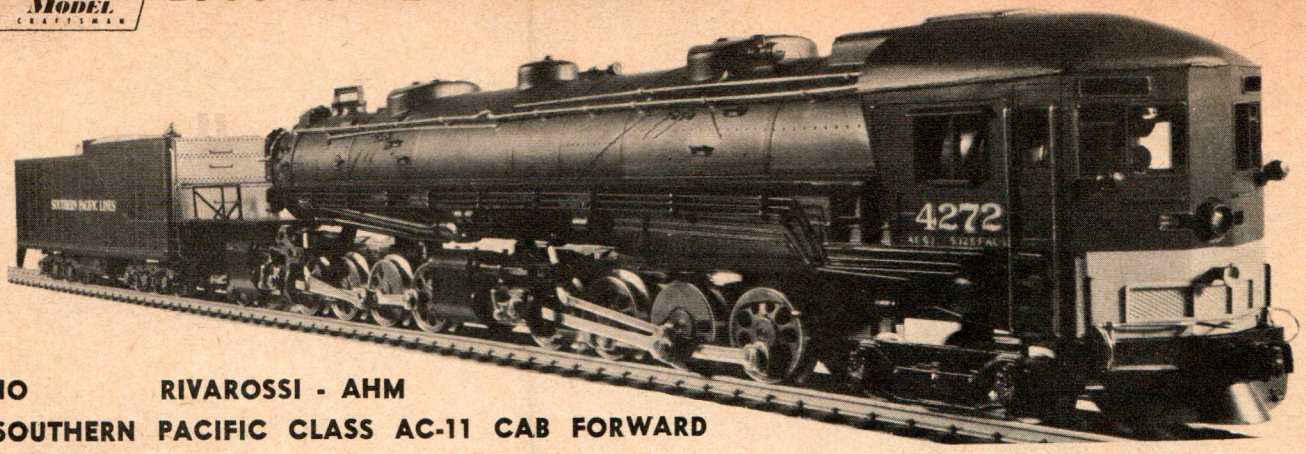






LOCO BUILDERS PHOTO — 259

4-8-8-2



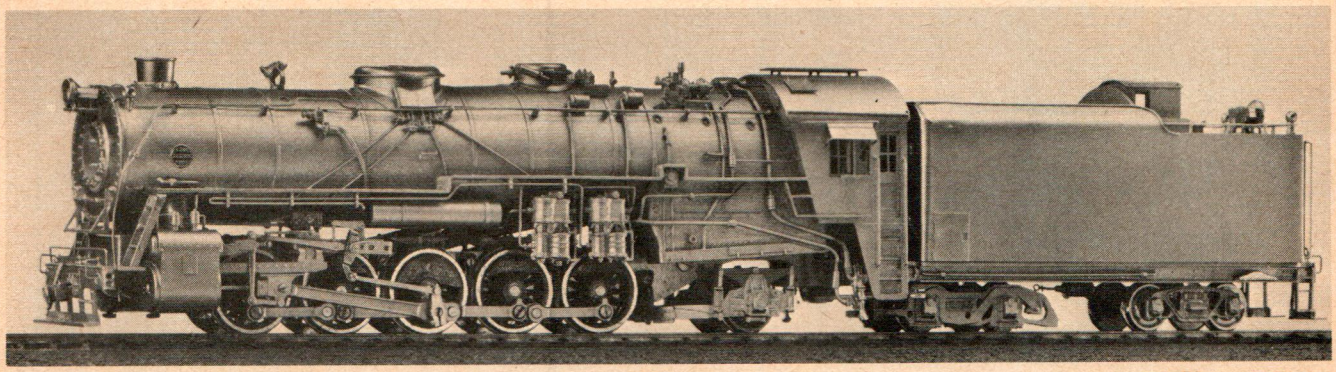
HO RIVAROSSI - AHM

SOUTHERN PACIFIC CLASS AC-11 CAB FORWARD

Southern Pacific class AC-11 4-8-8-2 type cab-forward articulated locomotive. Molded plastic construction with metal handrails, operating headlight. Italian 12v. DC ball bearing motor in universal coupling powers all 16 drivers. Minimum radius 18" with hinged metal frame. Length 17¼". Minimum radius 18". Buckeye tender trucks. Flat black spray finish, silk screen lettering. Square oil type tender. Mfd. in Italy by Rivarossi. Imported in U.S.A. by Associated Hobby Mfrs., Inc., 3214 N. Boudinot St., Philadelphia 38, Pa. Model new, Feb. 1966. List price RTR $43.95.

LOCO BUILDERS PHOTO — 266

0-10-2



DM&IR CLASS S-7 **HO** **UNITED - P.F.M.**

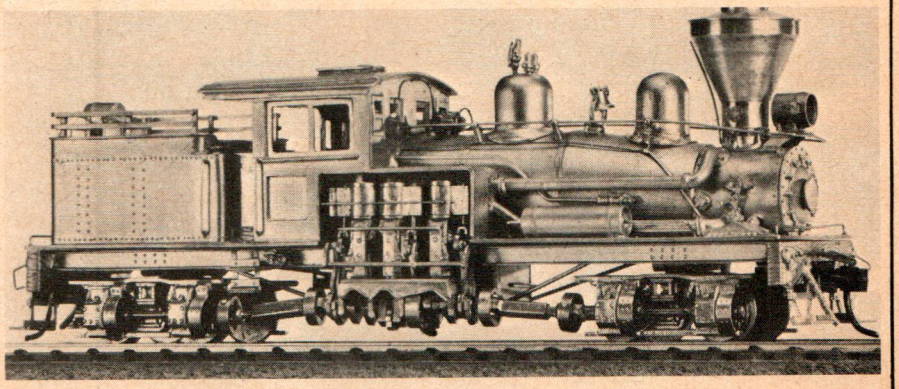
Built-up all-brass model of Duluth, Missabe & Iron Range class S-7, nos. 601-609. Stamped, formed, and turned fittings, plus Cal-Scale investment castings. Universal coupler pockets. Pittman DC-70 motor delivers power to third axle. All wheels flanged. Length 12". Weight 24 oz. Min. Radius 20". Price in the U.S.A., ready-to-run, unpainted, $69.95. Mfd. by United in Japan for Pacific Fast Mail, P.O. Box 57, Edmonds, Wash. 98020. Canadian price somewhat higher. See current catalog regarding parts availability.

LOCO BUILDERS PHOTO — 267

SHAY

SHAY CLASS B-2

Built-up all-brass model of two-truck Shay class B-2. Loco formed from half hard sheet brass, plus formed and turned fittings, supplemented with Cal-Scale investment castings. Pittman DC-66 motor, worm and gear drive. Weight 12 oz. Length 5-¾". Minimum radius, 15". Trucks are available for conversion to narrow gauge. Universal coupler pockets. Mfd. in Japan by United Scale Models for Pacific Fast Mail, P.O. Box 57, Edmonds, Wash. 98020. Consult catalog regarding parts availability.

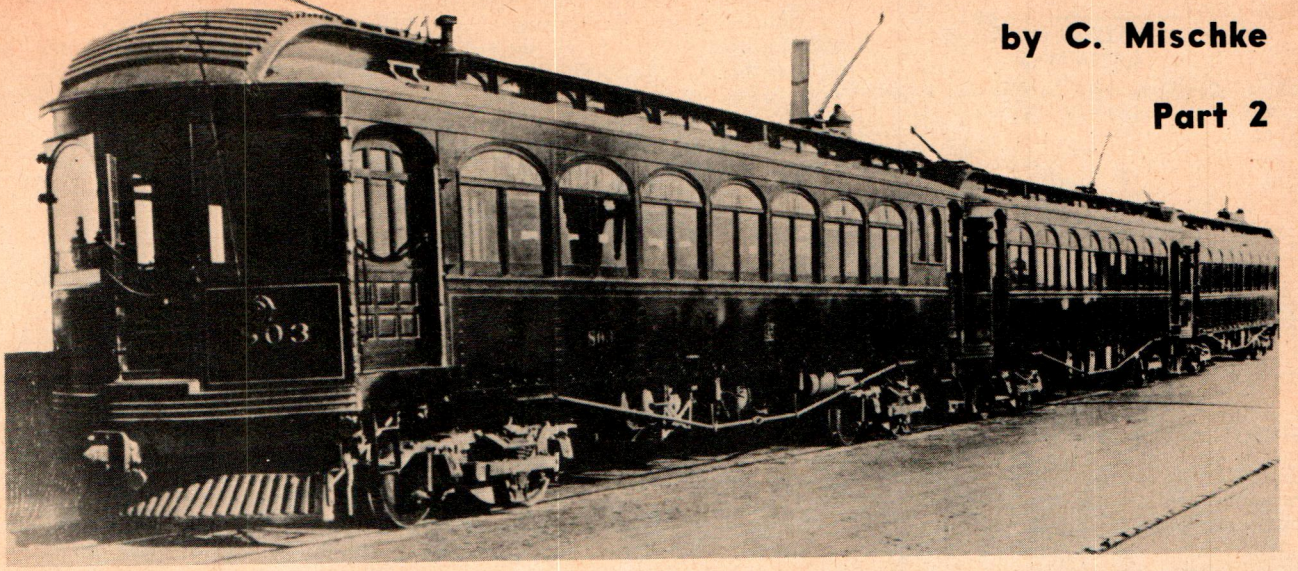


HO-HOn3 **UNITED - P.F.M.**

Interurban Electric Railways

by C. Mischke

Part 2



Jewett-built Lehigh Valley Transit combo's nos. 803-804-805 in MU on Allentown bridge. Note how steps of first two cars abut for crew convenience. Baggage compartments protect both ends of the train. All poles are on wire in absence of train bus. Third rail shoes were used on final leg of journey over P&W into Philadelphia.

The interurban railroad is perhaps more accurately modeled than any other form of scale model railroad.

TASTE IN prototype and taste in operational interest (train watcher, train operator, or train dispatcher) to a large extent control the big picture in planning a model traction line of durable interest to you. However, prototype practices and common sense shape more of the model than is immediately apparent. The salient feature of any railroad is the L/W ratio; i.e., the ratio of its length to its width. This number is very high since the width of rights-of-way ran from 66 to 100 feet and the length from 20 miles or more. The caricature cartoonist obtains immediate recognition from his audience from the display and exaggeration of one or more unique or dominant features. So, too, the modeler seeks to do this. The L/W ratio is a dominate feature of all railroads and the use of along the wall shelf layouts is to be preferred to a ping pong table of the same area. In fact, catering to the L/W feature is the best way of obscuring the necessary shortness of any model main line. Also for this reason it is much more convincing to model a short line than a long one. A hundred feet of route can be a far more convincing imitation of a suburban spur than an intercity line.

Consider the features that would be observable in a model of a 30 mile rural interurban, circa 1910. The basic schedule is opposing 90 minute service, single car trains prevail, with occasional multiple unit consists and peak extras. Freight traffic is largely LCL handled in a box motor and a few tailers. Occasional interchange freight cars are moved to and from the interchange point. Almost all of this traffic is inbound, with empties returning to the steam roads.

The meeting point for regular passenger trains is in the temporal center of the route, i.e., at the *running time* midpoint. Considerable street running at one end of the line can move the meeting point from milepost 15 to milepost 12. The Terre Haute & Western (Indiana) connected Terre Haute with Paris, 21 miles away. Because of Terre Haute street running the opposing trains met at milepost 6:51 from Terre Haute.

The passing point is established midway in time along with the central substation. Street running enroute makes for bad schedule precision and delays at the meeting point. This exasperates a dispatcher (to say nothing of the passengers). The Puget Sound Electric Railway solved this problem on their 36.5 mile Seattle-Tacoma line by making the central passing siding *three* miles long, permitting non-stop meets with several minutes tolerance. For operating interest at least two additional passing tracks are needed in addition to terminal runaround facilities. If these are provided, opposing passenger trains and a way freight can be on the line simultaneously.

One should provide as many of the typical interurban features as space and ambition permit. If you are modeling a definite line (and this *is* the preferred situation) its features are condensed, compressed and incorporated to the extent that is possible. Typically, there would be some street running with twists and turns, some side of the road and private cross-country traveling, with the private r-o-w dominating. You will have curves (banked and unbanked), breaks in grade, steam road crossings at grade and overpass, some economical and spidery bridges, cuts and fills with ups and downs to mitigate initial costs. Stub terminals have their charms too, for it gives the most emphatic sense of going from here to there. The pole changing adds realism to the operations.

One should avoid the bowl of spaghetti layouts of model railroaders, since electric lines did not dominate the landscape. In cites, crossing and recrossing can be explained away as intersecting street car lines. Sharper curves are prototypical but they tend to justify usual model railroad standards rather than allowing hairpin turns. The sharpest curve in the Utah Idaho Central was 150 feet and the sharpest switches were #4, comparing favorably with NMRA *railroad* minimums. The CNS&M traversed 90 foot radius curves on the Chicago elevated line, which is about as sharp as you want to go with multiple unit trains.

Operating highlights can include closing up of train sections at meeting points, and close following of the interurban behind the local street car. If freight operation fascinates you, modeling a remnant of an interurban such as the now freight-only Southern Industrial Railway (ex Southern Iowa) has potential. Before the Centerville (Iowa) power house closed down, the railroad used to trundle as much as twenty hoppers from on-line mines to the Centerville power plant, and interchange hoppers and other freight cars at the present extremes of Centerville, Moravia and Trask. Two box motors and one Baldwin-Westinghouse steeple cab locomotive of 1917 vintage perform the chores. Then on-line Iowa Railway Historical Museum operates CA&E

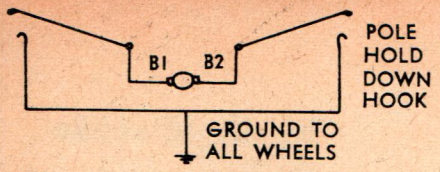


FIG. 1—Commonly used pole reverse wiring of interurban models and city street cars.

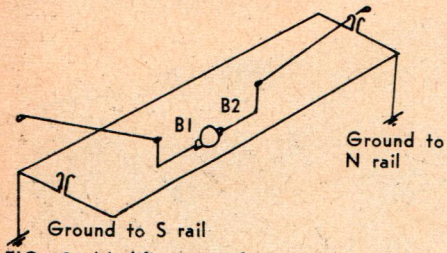


FIG. 2—Modification of common pole reverse wiring to allow any model car response to either N-rail rheostat or S-rail rheostat.

320, CNS&M 727 and WCF&N 100 on weekend excursions to add further occasional passenger interest.

Those modeling larger lines can include operational highlights such as shifting from overhead wire to third rail enroute, the dropping or adding of cars enroute as traffic requires, or the splitting of trains into fragments for various terminals (ala CA&E at Wheaton or Michigan Railway at Monteith).

The most impressive feature of model traction lines is the traffic density. It is sufficiently greater than usual model railroad situations (just as in the comparison of protype traction and steam roads) to merit investigation. A model traction motorman can have enough demanding his attention that he cannot afford to engage in playing the toggle switch concerto of ordinary layout operators for two reasons. First, the traffic density and movements he wants to duplicate introduce very complicated control panels, and second, his operating cohorts are likely to be strangers to his railroad. This problem is neatly solved by taking advantage of the fact that a model traction line has three electrical conductors (the wire and two rails) and usually uses permanent magnet field motors wherein the polarity reverse is seldom used, and the pole reverse is more common. Separation of the running rails allows independent control of *two* trains, and elimination of the redundant reversing schemes allows *four* trains to be independently controlled in a block. This brings us naturally to the consideration of controls.

The most common wiring for interurban models is the familiar pole-reverse scheme depicted in Figure 1. Each pole base is insulated from the car body and connected to a brush of the permag motor. Each pole holddown hook is connected to the grounded wheels. This system automatically directs the car in the appropriate direction for the raised pole. Two wasted control opportunities are present. One is the chance to ground only to one running rail and the other is the failure to exploit the permanent magnet field (model interurban cars are rarely backed against the pole).

The first possible modification is the provision of two holddown hooks one each end of the car (placed back-to-back to imitate some double-sided prototype hooks). The circuit sketched in Figure 2 allows the operator to place the down pole under the holddown hook appropriate to the control rail desired. If two cabs are provided and each connected to one running rail and the overhead wire, then *any* car can be made to respond to either cab by selecting the corresponding holddown hook for the down pole.

Most model interurban lines would appreciate the opportunity to keep more than two consists active simultaneously with worrying about block toggles. This is possible with a selective rectification scheme successfully used by some Michigan clubs. Figure 3 and 4 show the control cab and the individual car wiring. The key to the system is the use of rectifiers in the cabs and in the individual cars, and the single transformer. In Figure 3 consider the situation wherein all controllers are off except rheostat A. This allows pulse power (forward pulse) to reach the left rail. Cars A and B are the only ones that could be affected by the open rheostat controller A. However, car B has a rectifier which is opposed to the forward pulse, and so only car A responds to controller A. Any and all possible positions of the controller A, B, C, and D, results in corresponding obedience, letter for letter in cars A, B, C, and D. Thus we have independent four car control in a single block. In effect, a simple interurban model layout can be a single block railroad in that a car will respond to its controller only, anywhere on the line.

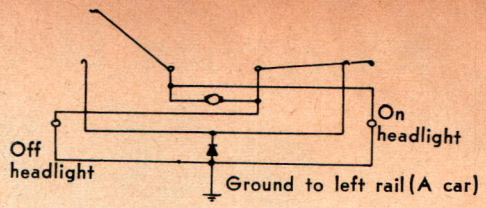


FIG. 4—Pole reverse wiring for an interurban.

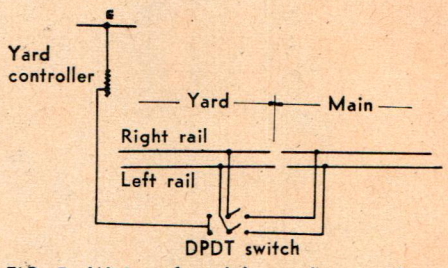


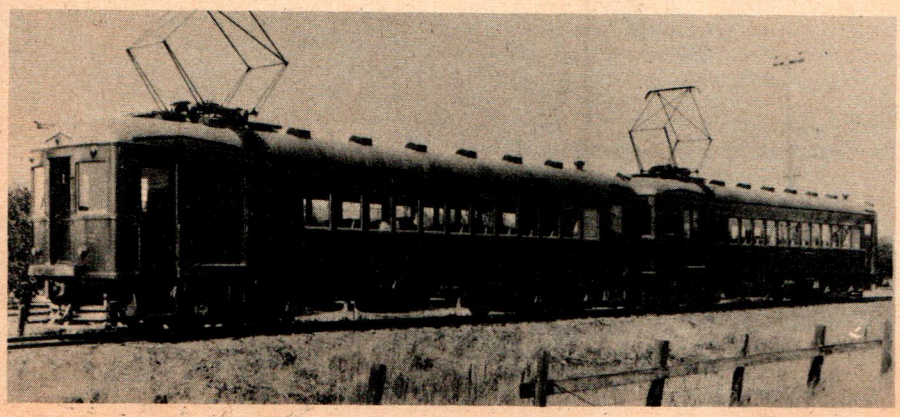
FIG. 5—Wiring of yard for yard or mainline.

Examine the individual car circuit depicted in Figure 4 which is for a double-ended car, and of specie A. When either pole is on the wire the car will move in the appropriate direction but only in response to controller A. Now here is an interesting observation. If this A car which is now left rail grounded is picked up and replaced on the track en-for-ended it becomes a specie C car. This opens the door to interesting operations for double-ended equipment layouts and introduces a complication for single-ended equipment operating on a line with loop (or wye) terminals. However, if either railroad (three color) signals or Nachod signals are contemplated, the polarity control and signal cirucits use the same relays, and allows up to three following movements with independent control.

For simplicity and clarity examine the point-to-point stub terminal line. Cars wired in accordance with diagram of Figure 4 have headlights which are unrectified. This means that the headlight will be lighted on the A car if controller A is on, or if controller B is on, or if both controller A and B are on. This means that on station stops or meeting points the headlight of a waiting A car will stay on if the B car is moving. What can be said of headlights is true of interior lights if dual lighting is provided. Note also that the poles control the lighting of the appropriate headlight. If no B car is running there is nothing to prevent the A motorman from cracking the B controller (no B car poles up) and assuring himself of continuous headlights and interior lights.

If enough switching occurs at a

St. Louis built combines 62 and 63 of the San Francisco, Napa & Calistoga Railway, reputedly the last standard steel interurbans built in U. S. Intended for single or MU service, cars typically ran with RPO trailer. Cars approached mainline railroad design.



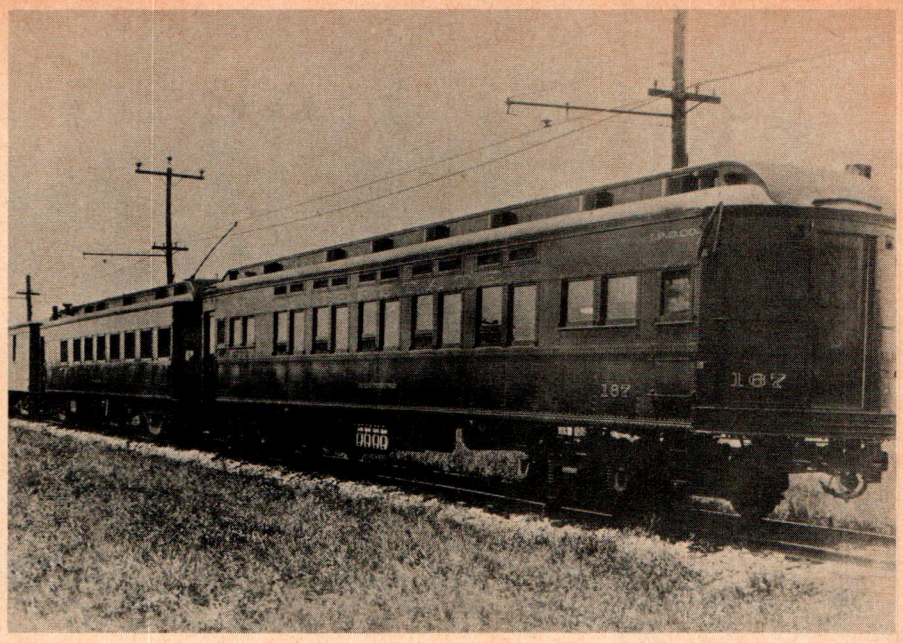
terminal involving passenger equipment, it may be useful to establish a yard limit and introduce a yard control and its attendant yard motorman. Figure 5 shows that this is simplicity in itself. In the yard the rails are tied together and unrectified a-c is supplied to the wire and common rails by the yard controller. Under these circumstances *any* car with its pole up within yard limits will move and respond to the yardmaster's controller. The identity of the cars need not concern the yardmaster in general switching moves *in his control.* For example, if he must assemble a two car A train on track one, he identifies the two A cars in the yard that he wants to use in the consist. He moves them or other cars without concern for identity and solves his switching problem by raising poles on cars he wants to move and lowering them on cars he wants to stay dead. After the consist is properly located and ready for the road, he flips his single toggle which unties the rails from each other and connects them to the main, establishing the A, B, C, and D, car control within yard limits, and the main line A motorman can leave the terminal independent of arriving trains of other identity. As soon as a train is annulled by arrival at the terminal, the toggle is flipped again to establish yard limits and universal hostler control. Refinements are of course possible which give the hostler yard limit controls of any or all combinations, but only in the busiest of terminals would this be needed.

Having established the idea of a single block main line and the notion of yard limits in selective rectification context, it might be useful to examine how these tools may be applied to protraying interesting operations. A toggle introduced in controller A to bypass the rectifier, when closed will allow the A controller to operate both A and B cars simultaneously. In effect an A and B car can be run m-u from the A controller. This capability would be useful when trying to imitate the dividing of a train during its run for two separate destinations, as was done by the Michigan Railway at Montieth. The A motorman makes the run from the terminal of origin to the branching point. The B motorman makes the branch run while the A motorman continues with the forward part of the consist. The division can be automated as follows. With the A cars leading, the train is stopped with appropriate coupler over a Kadee Electromagnetic ramp, and A cab opens shorting toggle. As the ramp is energized by the B motorman, he moves his part of the consist forward to bunch slack and stops. The A motorman departs with his section of the train and breaks the coupling. The B consist can depart as soon as necessary switches are lined.

When the separate consists return the makeup is accomplished simply by running the rear cut into the automatic coupling. This maneuver is predicated on use of Kadee Magnamatics (or CLW automatic couplers in O scale), which has implications in minimum radii and straightness of coupling and uncoupling locations. The station at which train division occurs can be the focal point of the railroad and opposing movements meeting at the junction point can result in impressive conjestion and flexible operation with no electrical blocking of track. The opposing passenger movements are obviously A-B and C-D combinations.

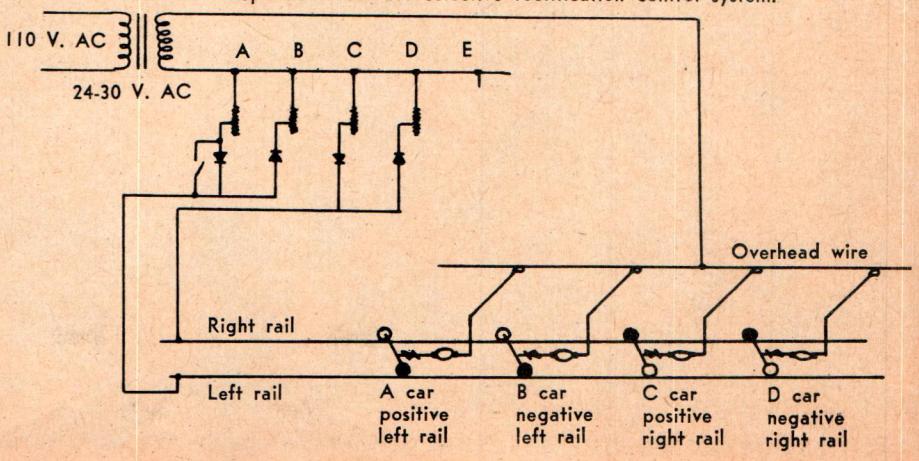
The assignment of all cabs to passenger operation in rush hours does not preclude the operation of freight in off hours consonant with the availability of all passenger equipment. The technique is to use all cabs for passenger movements in rush periods and use of A, B, C, and D passenger cars as required with up to four trains on the main simultaneously. As rush hour subsides and the road becomes available for general transportation, the C equipment is looped into A identity and the D equipment is looped into B identity. The freight motive power (which is C and D specie) can now move on the main, the name passenger trains made up of A and B cars (which include all passenger cars at this time).

Freight operations can be carried out with pole reversing if desired or preferred, using d-c on right rail and overhead. This eliminates two cabs during freight switching operations in which polarity reverse is used. The freight motive power used must have its car rectifier shorted out by the bypass switch. If it is a C car it will move forward in response to C cab and reverse in response to D cab. A pantograph can be used. The blending of a-c and d-c equipment is dangerous however, because an a-c car will run on d-c, but a d-c car will have its motor ruined by the a-c. For your own circumstance design a fail-safe interlocking system to protect your equipment.



Combo 155, express trailer 477, unknown parlor buffet car, and trailer sleeper 167 of Interstate Public Service, arranged for good riding and tracking as single ended consist. Inclusion of express unit in train center would be unusual, perhaps accounted for by equipment shortage at other end of line or a special.

FIG. 3—Independent four car selective rectification control system.



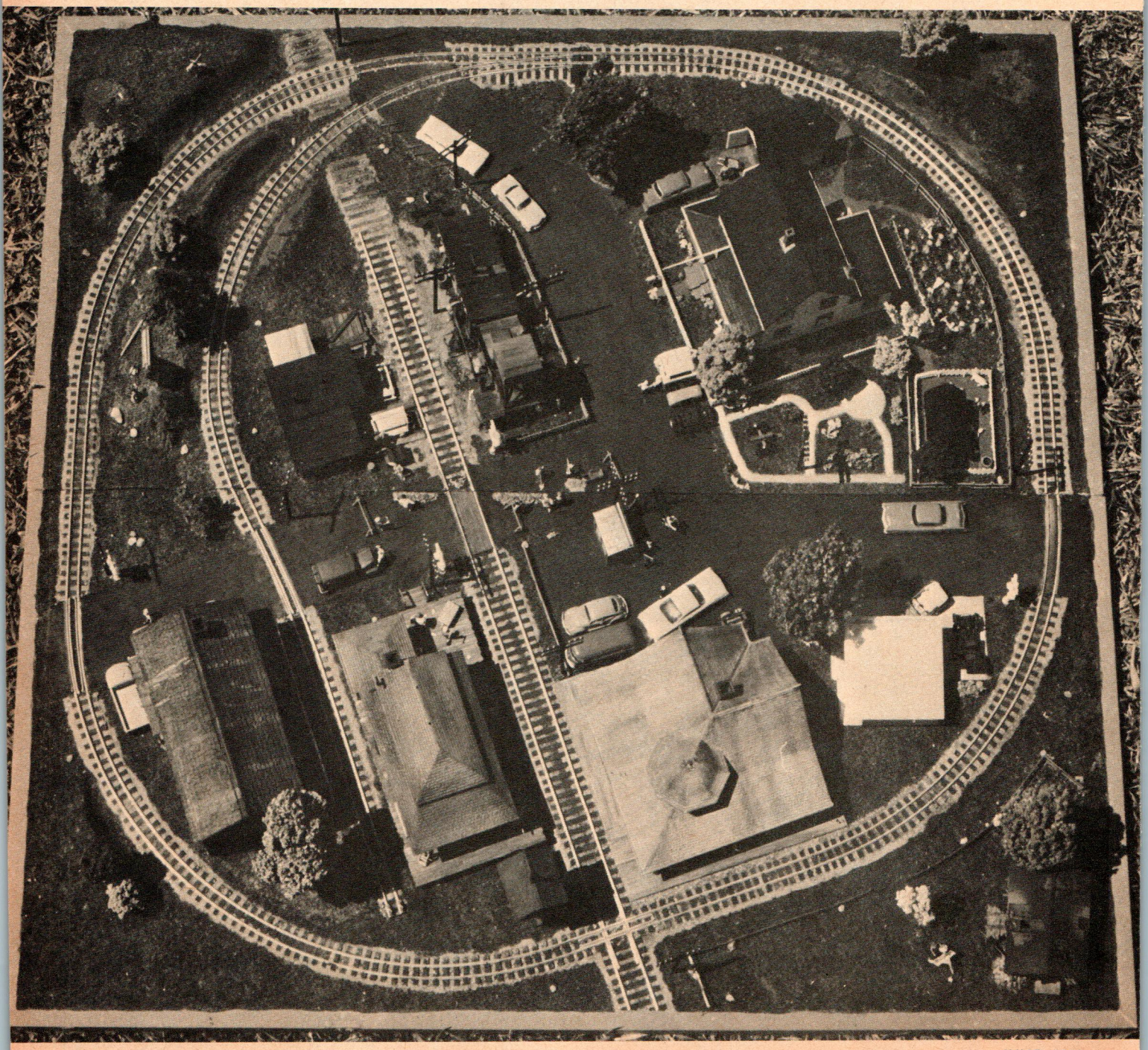
H0n2 Two by Two . . .

A complete narrow gauge pike can be fitted into a standard GI footlocker. This one even has a standard gauge inter-change and hand laid ties.

BELOW—Aerial view of author's diminutive HOn2 layout reflects its planning and detail. Work gang in center provides cover for joint between two sections. Offset placement of structures and roads adds to illusion of size, difficult to achieve in small layouts. Size is 28" x 29".

I'VE ALWAYS been fascinated with miniature layouts of the so-called suitcase variety. One in particular by Bill Brown back in South Carolina was built on an old chopping block. The story of how it came into existence is almost as interesting as the layout itself. Seems that when the latest addition to the family arrived his wife laid the law down on his empire in the spare bedroom. Complaining politely about no longer having a place to build his layout the frau promptly tossed this chopping block his way with words to the effect that he might try it for size. Well I've never known a railfan who wasn't resourceful in an emergency and Bill was no exception. He crowded more detail on that small slab than most fellows get in a basement. He had a loop with one spur and operated a Kemtron Railbus and powered handcar. There were numerous buildings and at least fifty people, and all sorts of odds and ends.

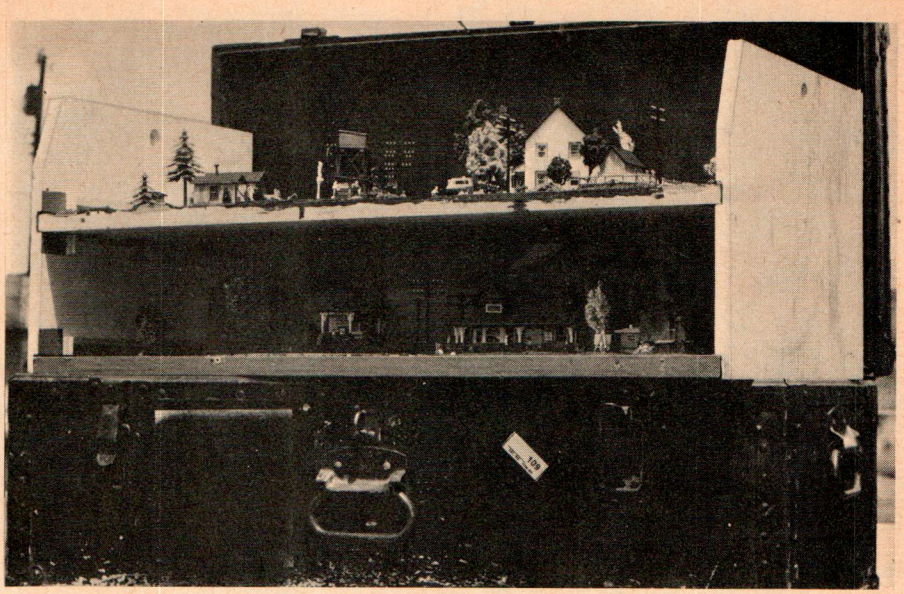
Up to now the smallest I had attempted was a 4' x 6' layout built on a lumber operation theme. I used 9" radius curves to crowd in plenty of operating possibilities. When I arrived in Germany I had about three months to kill before my family joined me. This gave me both the free time and



. . . or is that any way to pack a footlocker?

by Bruce C. Bowden

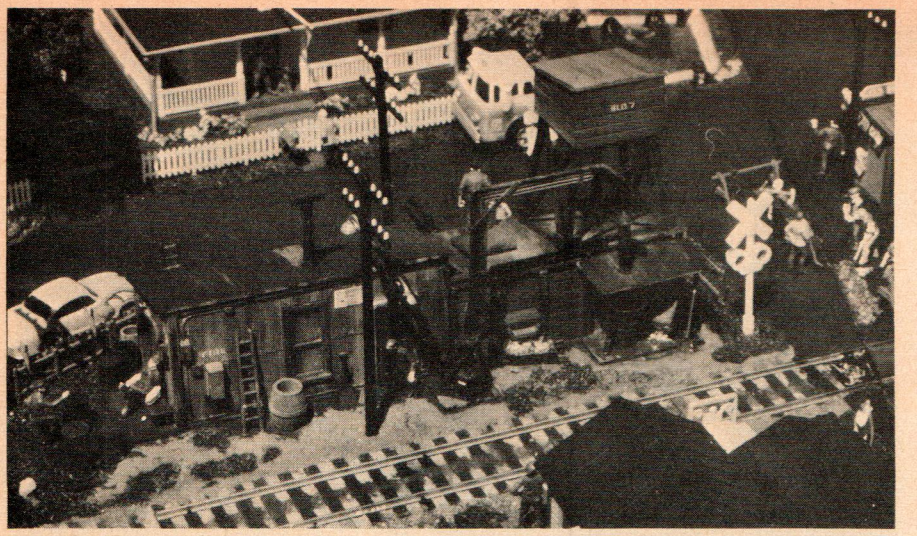
When stored, the layout is supported by two plywood sideframes within an old footlocker. Round holes in the top of the frames permit raising of lowering of the layout. Layout is rugged.



the reason for a suitcase pike. I settled on a GI footlocker for a container. It appeared that two boards (½" plywood about 14" x 29") just large enough to fit inside the footlocker and stacked in such a manner as to allow about 5" height above each, would provide a reasonable size and allow enough depth for scenery. Slotted side frames were built to hold the two sections securely in place while inside the footlocker. Two ⅛" pins were fashioned to align and hold the two boards together when in use. With this task accomplished I set about to construct a layout on my 28" x 29" slab.

In planning a layout I always work out the scheme first. I would do this one in HOn2 on a New England motif. This would permit sharp radius turns

Overall view shows attention to detail with a profusion of figures in action. Note such bits as the abandoned standard gauge trackage, the Burma Shave signs, customization of commercial HO buildings.



Weathered maintenance of way structure with some added detail is set right into ground with Permascene. Author describes simple technique for weathering in article. Floquil can also be used.

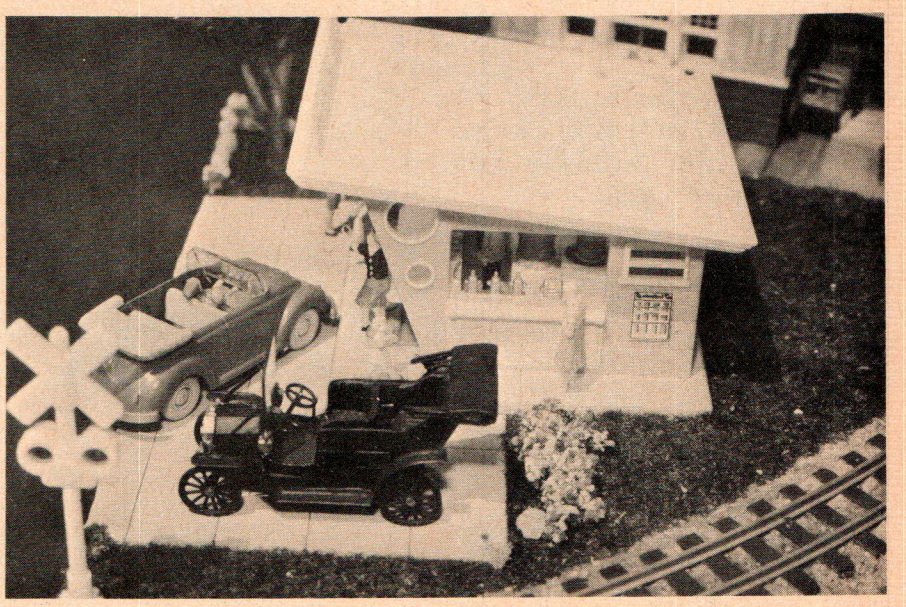
and crowding of the structures. The track plan itself would be simple. I wanted a loop for continuous operation, primarily for running in my narrow gauge stock, and certainly I would have to have at least one spur. I just happened to have an old HOn3 stub switch on hand which I could modify. The only caution I had to observe was to keep the track close to 90 degree angles to the joint where the two boards separated. This would eliminate any tricky alignment problems. The choice of the two foot gauge made it possible to use several different radius curves so that I could get away from a circle — as such. Then, to give the railroad a little character, I decided to run in a standard gauge line. The narrow gauge line would be an interchange road at the terminus of the standard gauge. This posed a challenge also. I would have to construct a crossing for the first time, and in two foot to boot. I chose the structures which would best fit the scheme of the layout, most were Revell plastic kits. Finally I worked out the arrangement of track and scenery directly on the boards in pencil. In order to get around the joint in the boards and minimize its appearance this preplanning phase was essential.

The ties were cut down from standard length ties and glued in place. Code 70 nickel silver rail was spiked down and gauged with a hand made jig that measured exactly 7mm between the rails, or true HOn2. Feeder wires were imbedded in the plywood, soldered to the rails and terminated in two flush female plugs at one end of the board. Similar male/

Husband paints while wife toils in garden. House is by Vollmer and figures are by Preiser. Unit fits snugly at corner of layout. All scenic units are securely fastened to layout permanently.

Old plumbing supply house provides down east flavor, is modified from Model Hobbies kit. Boulders scattered around and 2 ft. gauge car on siding all add to scene. People and cars are all molded.

HOn2 boxcar awaiting a new load. Power supply for layout is plugged into two jacks shown in lower foreground. Tree is commercial type.



Grass is nylon flock sprinkled over wet shellac. Ice cream stand is typical of New England and figures enliven scene. Girl has icecream cone.

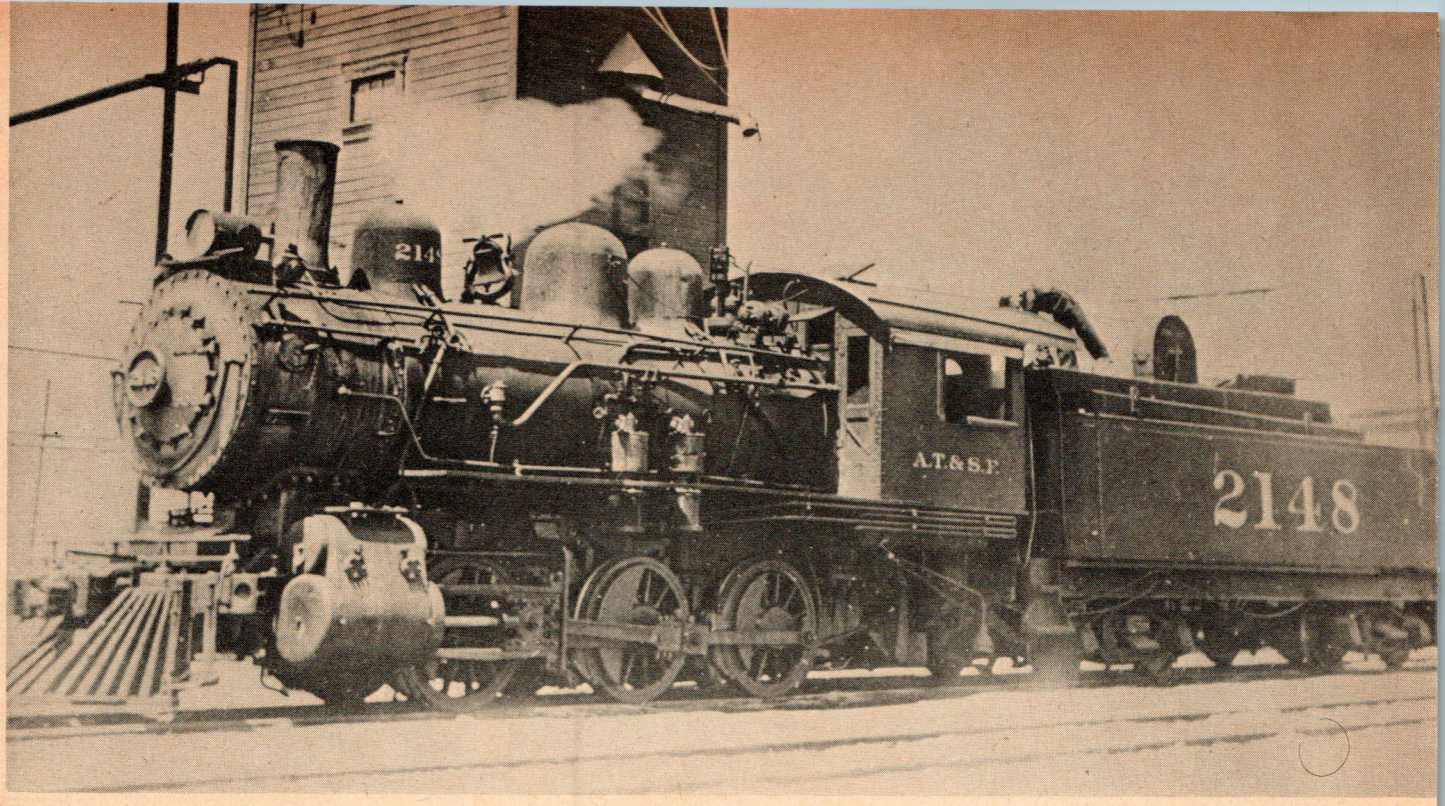
female connectors were used between the two boards. The power source was a small Model Rectifier Power Pack (model T-2A).

All of the structures were then assembled separately; painted and mounted in place. To break the flatness of the layout several small cuts were made on the curves; even the narrow gauge spur was elevated slightly. Permascene was used for all landscaping, for building up the roadways, and even for track ballast. Green nylon flock set with shellac was used for grass. The addition of small details completed the layout and since this was to be fully portable even the automobiles were glued down.

For painting I prefer the flat enamels. For toning down and washong out colors I keep a bottle of thinner handy that I have used to clean brushes in. Often times to tone down a freshly painted structure I will simply brush in the residue from the bottom of the thinner bottle. This is a simple effective weathering technique that doesn't require any particular skill. If it goes on too dark just take a few more swipes at it with the clearer portion of the thinner. The dark residue will settle into the low spots highlighting the other areas.

My preference for Permascene as a scenic material shows up even in this layout. With a little water and applied about ⅛" thick it dries as a rough textured rocky material. With a little pressure such as rubbing back and forth over the surface with a finger it can be smoother out fine enough for roads. It's clean to work with and can be mixed up in large enough amounts to be worked over an hour or two. I keep an eyedropper of water handy. When it's dry it can be cut away with an X-acto knife to locate a structure in place or what have you.

I had a lot of fun putting this pike together, and who knows, someday I might try my luck with a chopping block too!



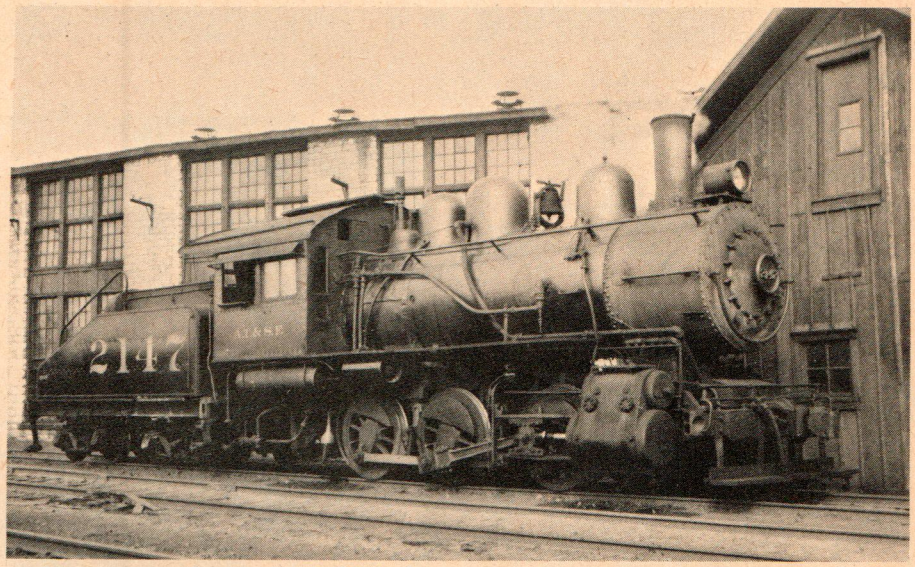
ATSF 0-6-0 SWITCHER

by Bill Schopp

Santa Fe switchers have thus far been scarce, but one can be built from other available loco models rather easily.

Left side view, above, of Santa Fe 2197 class 0-6-0 switcher shows tender used with model. Pilot is unorthodox for use on switcher.

Right side view, below, of Santa Fe No. 2147 with slope back tender and switching pilot. Large tender numerals were Santa Fe Trademark.

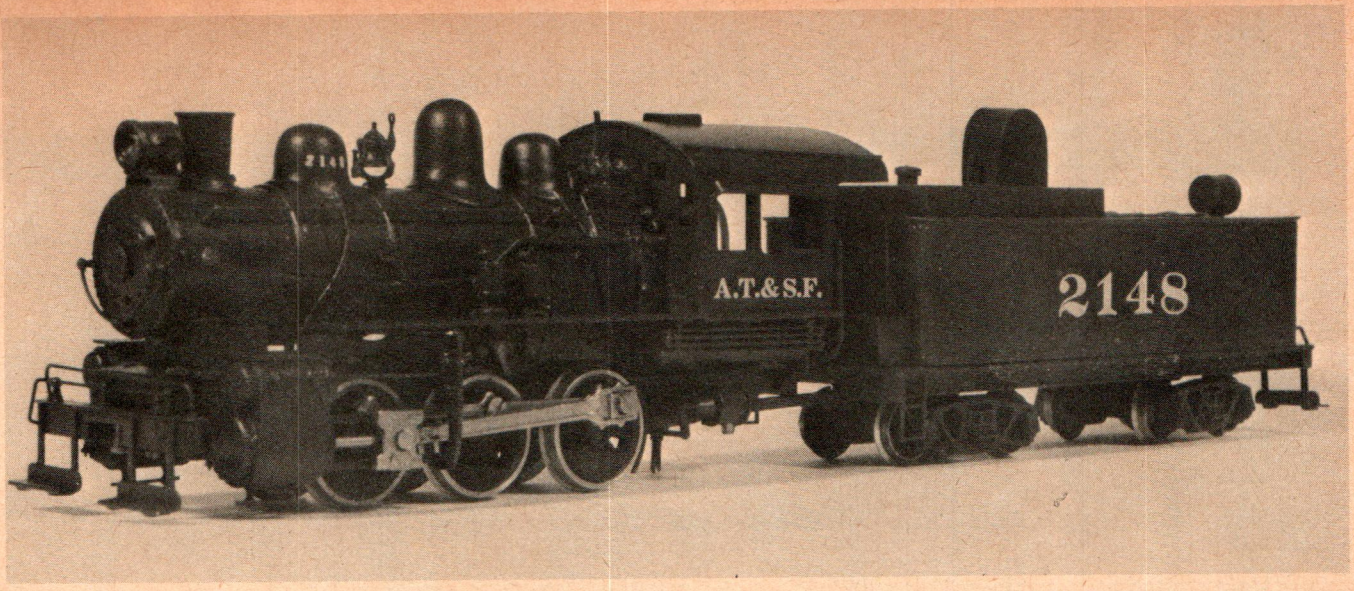


FOR THE "popular" railroads in modeldom, the big steam engines appear on the market first, followed reluctantly by the switchers. For a long time, more and more Santa Fe engines have been available in HO, but no steam switchers. In fact, when I once wrote Max Gray suggesting such a model, his reply was that offhand he didn't know what they looked like, having moved to the Bay Area after switching on the SF was all diesel. During the past years I have had correspondence with a few readers who have converted MDC 0-6-0's to Santa Fe switchers. During the same time, also, I got a group of such switcher photos from Gerry Best. What finally moved me to action was the recent "Iron Horses of the Santa Fe Trail" book published by the S. W. Loco Historical Society which contains not only text and photos but also diagrams of all classes of Santa Fe engines. To my mind this is one of the finest steam loco books published, along with those by Al Staufer, and the Union Pacific Motive Power book.

My start on the Santa Fe 2197 class 0-6-0, which examination of photos and plans, seemed most suitable for conversion from SP, started with a Paragon 0-6-0 switcher. If not available locally, these can be had (as of early 1966) in limited quantity from Gill's Hobby Shop, Box 831, Sacramento, Calif. for $29.95. While, in detail, not quite up to present-day-standards, they do have quite a few lost wax castings and run well. Best of all, they have a box tender (be sure to specify that) suitable for use as one of the various tenders the Santa Fe used with the engine. (United's UP 0-6-0 tender looks like a suitable slope-back variety).

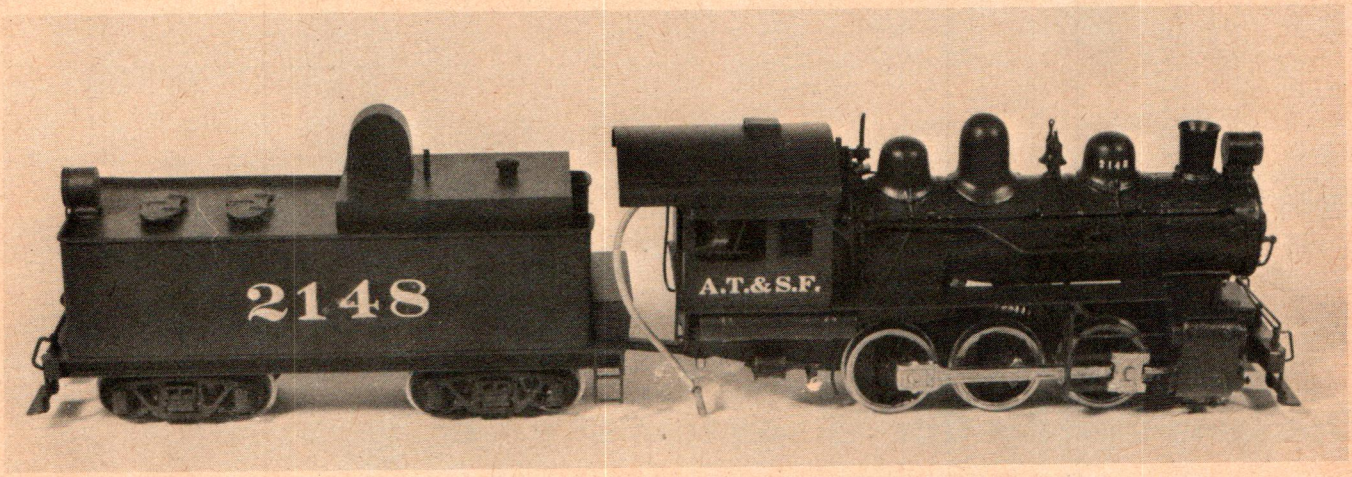
You could also start with a Balboa 0-6-0 which has more detail such as rivets on the cab, brake shoes, etc. but it means "throwing away" that luscious tender and getting a Paragon or other suitable extra tender.

On top of old smokey—i.e., the boiler—you first change to a Cal-Scale Santa Fe headlight HL-210. I did not change the stack, but in light of comments made about my "pilot model" I will change to one of the higher Kemtron lost wax stacks, possibly X-121 or whatever I can locate. No change is made in the forward sand dome. The bell may be left as-is, or replaced with a Kemtron or Cal-Scale lost wax bell. The steam dome on the model in the photo was replaced with an extra high one, a die cast product of K's Precision Model Engineers of Great Britain. However, comments have made me decide that I should have left the original dome in place,

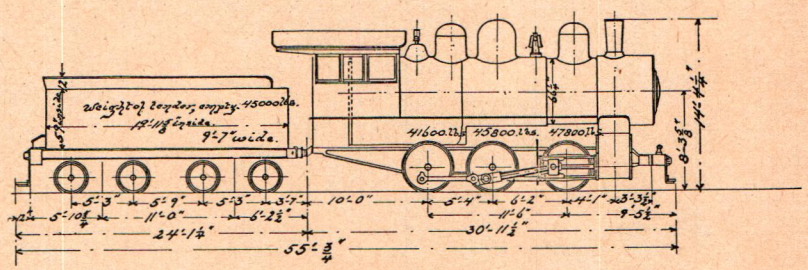


Authors model in right side view with square tender. Prototype also used slope back tender. Prototype 2148 once sported pilot, interesting modelable detail variation which would arouse many.

Model photo by Jim Albanowski. Prototype photos from the book "Iron Horses of the Santa Fe Trail", published by the S. W. Locomotive Historical Society.



The completed model in a left side view. Stack and dome are to be changed in conformity to prototype. Piping, other minor details are subject to frequent change between different locos in series.



merely removing the pop valves and whistle. If these were unsoldered, to save, you have to plug up the holes. They may be cut off with a motor hand tool or a jewelers saw, letting the roots plug up the holes.

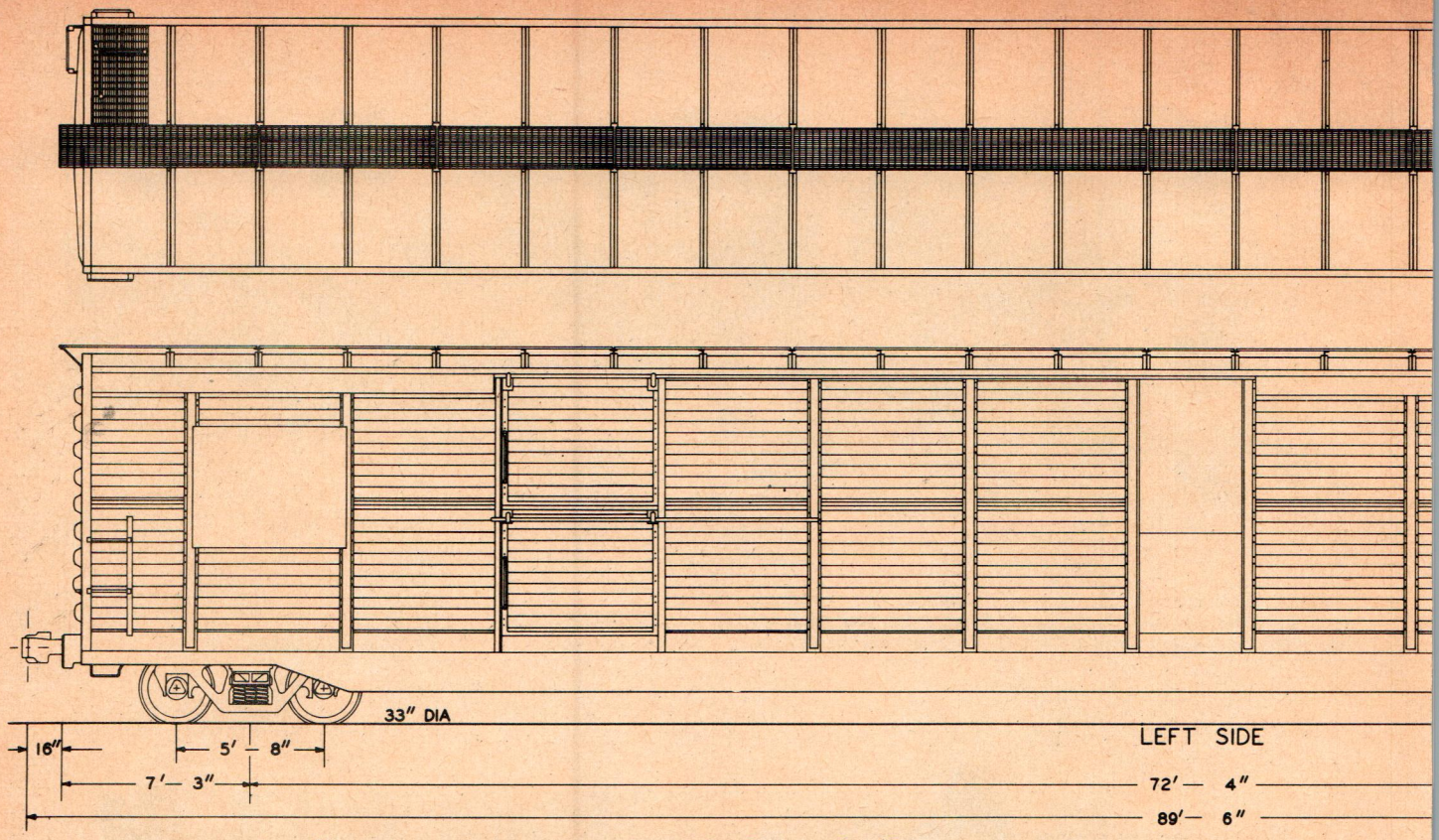
The rear sand dome must be moved forward a little to permit placing a Cal-Scale AD-228 auxiliary dome with fittings between the dome and the cab. The cab itself shows in photos as a Santa Fe 2-window cab, but in the diagram as a 3-window cab. Since the latter fits in with what is available, I left the cab as it was.

Running boards should be removed from both sides and replaced with new ones cut from Kemtron safety tread X-1141. The compound airpump goes into your scrap-box, and is replaced with two single airpumps, such as Kemtron K-427 or Cal-Scale AP-257; the running board must be cut to fit around these. The photos of the model and prototype give an idea of how the running board goes.

On the mechanism, the main change is to remove the valve gear, yet leave the guide yoke to support the Stephenson valve gear valve rod you must solder from guide to cylinder block. The tab below the crosshead which supports the crosshead link of the valve gear must be cut off, leaving some trace of its anchorage behind. The long crank-pins in the main drivers must be replaced with any long crankpin screws with head, or 0-80 screws through bits of tubing.

On the tender you must fabricate the hose reel housing from shim brass. Easiest seems to be to solder the two round-top pieces to the top of the tank, then wrap around the edge piece and solder it quickly first at the top, each side, then at the bottom, each side.

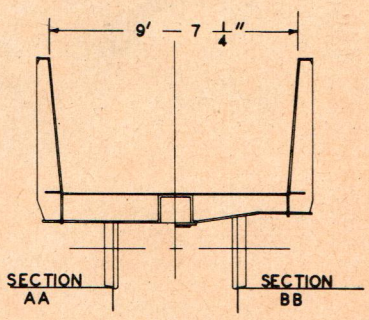
All this soldering requires some dexterity, and (with the exception of the unsoldering) could be done instead with Epoxy, allowing a 24-hr. period after one addition before proceeding to the next. I use my favorite carbon electrode soldering tweezers, which are a bit of an investment unless you plan to use them a lot. You could also use a very heavy—around 250 watt—soldering iron (no gun) for the heavy soldering work. A small iron or a gun would not work well.

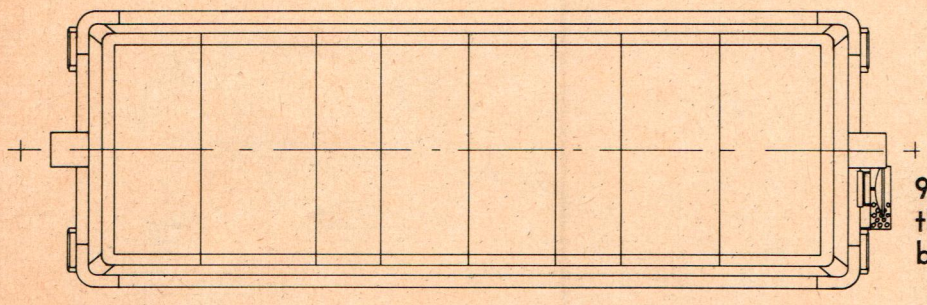


Northern Pacific 85'6" Double Deck Stock Car

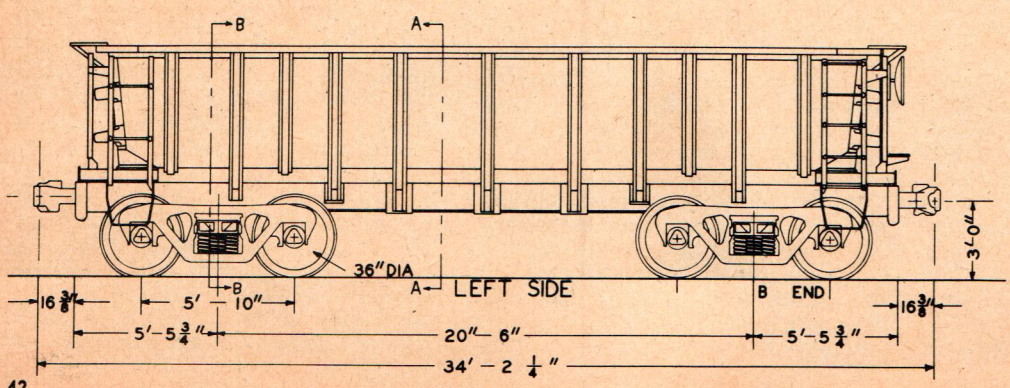
Drawn by Larry Jackman

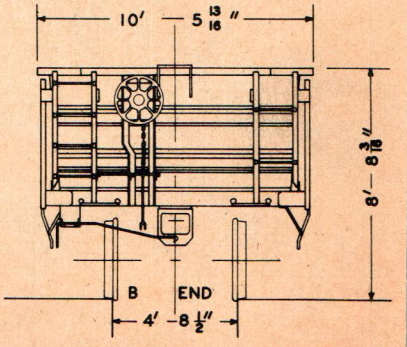
Dominion-Eastern Car 98 Ton Iron Ore Car

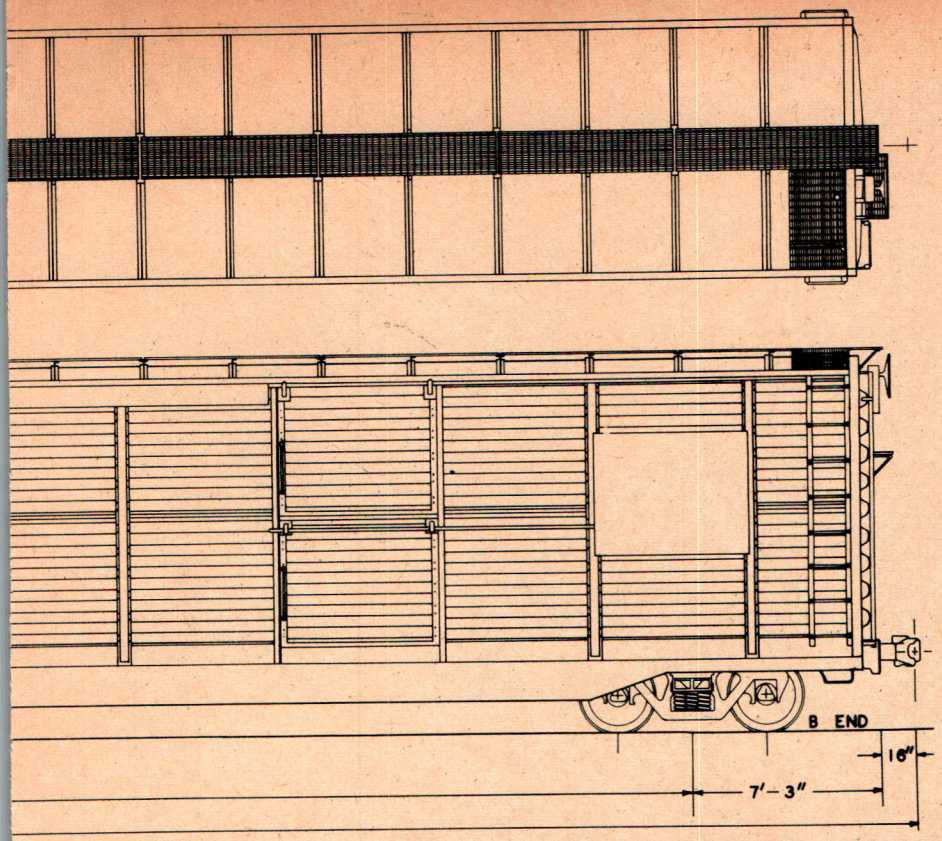




98 ton capacity is packed into this short 34 foot ore car used by the Iron Ore Co. of Canada.







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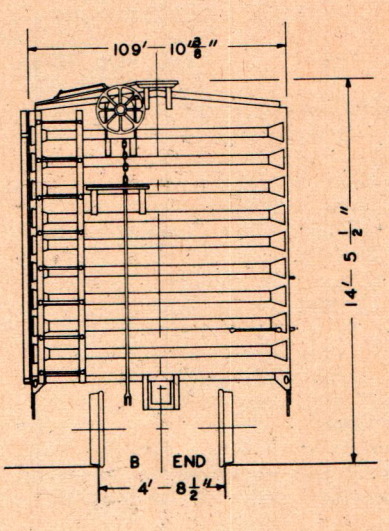

Open Circuits

by Bill Schopp

Open circuits occur when electricity is unable to complete its flow, leaving wires and track in what appears to be a dead condition. Dirt, unsoldered wires, and other broken connections are the usual cause; easily remedied.

NORMALLY, when you turn on an electric light switch, the light lights. since the switch closes a circuit from the generator to the light. But if you lived in the northwest during the Great Blackout of 1965, and you turned the switch on, no light lit, nothing happened: this was an open circuit. Hence, you might say that I am writing, at length, about nothing.

True, the above example is extreme. The circuit was open then at the generating plant, which had shut down. A similar close-down of a switching station, a transformer on the nearby pole, your own household's main switch, a blown fuse, a defective switch, or even a defective socket could also let "nothing" happen. A flaw in any of the wiring between those points, or in any connection within those points, might likewise let a circuit be open. So much for open circuits outside the model railroad room: from here on we'll concentrate inside the room.

But outside shut-down must be ruled out. If your lights go out, you usually check first to see if lights on other circuits in your house work: perhaps you have a blown branch fuse, or even a blown main fuse. You look at your neighbor's house to see if he has lights. You call friends nearby to see if they have lights. You turn on a transistor radio to see if familiar TV and radio stations are operating. Thus you check the extent of the blackout and determine if you can do anything about it.

So with a "blackout" or open circuit on a model railroad. You turn on your speed control, turn it all the way up as you always should when operation is in doubt. Nothing happens. You flick your reverse switch: again nothing happens—I've been known to leave it in neutral! You listen to your power pack to see if it has the familiar light hum. If not you check to see if it is plugged in; you may change it to another socket to see if the plug itself has become worn. You check your ammeter and/or voltmeter to see if there is any power flowing from the pack. You may spark the wires from the power pack together to see if you do get a spark—or rub a key across the running rails for the same purpose. All of these actions are almost instinctive with a model rail of any experience (though not necessarily in the order named), when he is faced with an absence of power—not a short circuit, not a jam-up, and not a bind. Any of these, if power is left on, will cause a thrown circuit breaker on your pack, or a blown fuse, some heat, some smoke, the sound of an engine *trying* to run, a heavier than usual amperage drain shown on your ammeter, and most telling, a throatier thrum of the transformer inside your power pack.

In going after the cause of an open circuit, I'd suggest checking the power pack first. It should hum lightly. Its DC terminals should spark when you short a key or a piece of wire across them (a test light is the professional thing to use, just a 12v. GOW bulb with its leads), brightly if the rheostat is on full-speed, lightly at lower speed settings. If there is no hum, no spark, flex the 110v. line cord which may have a break in it, and check its plug to be sure a wire hasn't come off its screw terminal. If you suspect the power pack, try another power pack, or enough batteries to give you 12v. DC, or try your power pack in place of your friend's, on his layout, which has just worked from his pack.

Assume the power pack hums and sparks when required, check the connections to the track. One may be loose or completely disconnected. Wires that are soldered to the rail can appear to be connected, but the solder may have cracked. So prod each soldered jooint. If you have a control panel outside the power pack,

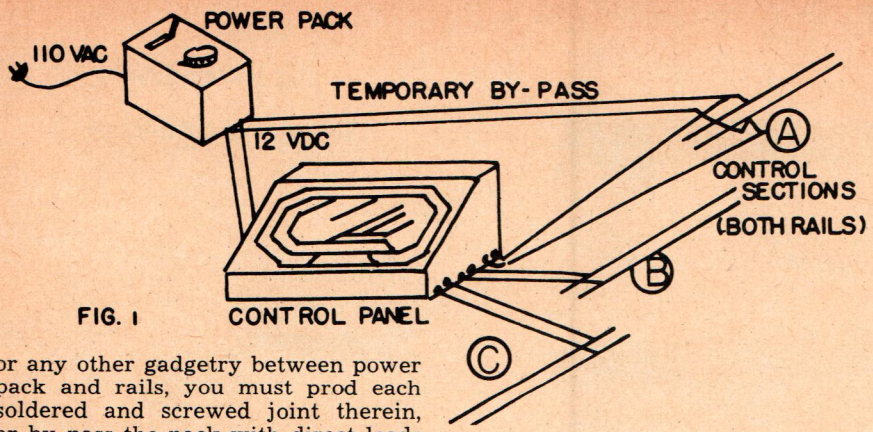

FIG. 1

or any other gadgetry between power pack and rails, you must prod each soldered and screwed joint therein, or by-pass the pack with direct leads from pack to running rails (of one control section if you have more than one). See fig. 1.

After a while you learn where to look. My most recent layout had a lift bridge to which power was fed by flexible wire leads running to a terminal strip. During the six or eight years of the line's existence, perhaps four times I found open circuits caused by one of the flexible leads breaking just ahead of the screw on the terminal strip, so I'd look there first.

If you have more than one control section, be sure that it is not just one that is affected. Maybe you have power in all but one. Thus you can localize your difficulties. Sometimes by flipping track switches several times, one by one, the cause of an open circuit—a poor contact—can be eliminated. With Snap- and Custom-Line switches, very rarely the rivet that connects the closure rails and stick rails electrically may start giving poor contact. This can be fixed by punching the rivet. With all-rail frog switches, a switch point may make poor contact with its adjacent stock (outside) rail; dust or a piece of ballast will not conduct electricity and must be brushed or blown out. That is why most users of all-rail frog switches insist on a "back-up system" of auxiliary wiring (See fig. 2) around switches via contacts on the switch machine—in itself subject to dirty contacts, broken solder joints, etc.

If everything is good so far, with power actually flowing through the rails as attested by sparking, a test light, or running another engine, then the trouble must be in your engine. But one more thing: a surprising number of HO engines pick up with only 2 wheels, return with only 2 wheels — most diesels, four-wheel switchers, and a few others. If one of these two wheels is raised slightly by an insulated frog on a Snap- or Custom-Line Switch, the other wheel performing the same job may also be raised, or kept from contact with the track by some dirt. Result is an open circuit, which, like others caused by dirt etc., can be eliminated simply by nudging the engine ahead or back a little. Such stalls as a result of a brief open circuit are much more likely to show up in slow speed running. Hence testing for causes of an open circuit should be done at what should be "full speed."

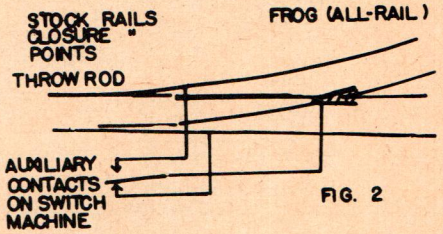

FIG. 2

A big help in checking for open circuit trouble in an engine is a short piece of test track on your workbench. This can be just a terminal sectional track, or a two or three foot section of other straight track. Put the engine on this and touch test leads from your power pack (which is turned full speed on for either direction) to the rails or the terminal screws. This must be done cautiously so that the engine does not run off the end of the track onto the floor.

Test Leads

What are test leads? Just pieces of flexible wire from your power pack, with either prods or alligator clips on their outer ends. I use a piece of electric cord, with ends split enough to connect to the pack and to allow clipping to different parts of a rail or loco. You can just leave the outer ends of the wires bare and touch them as needed but a clip is a great third hand (See fig. 3).

No luck? Invert the engine on your bench, taking care that it doesn't roll over and off the bench to your lap, thence to the floor. Touch one test lead (whose livesness you constantly verify by sparking it with its mate) to the tender or to the wireless drawbar or lead wire from motor to tender. Touch other wire to a metal part of the engine frame. The motor should run. The front engine of an articulated steamer should be supported a bit to be sure power is delivered in a straight line. In the case of diesels, you touch the wires to each power truck or the wheels thereof—

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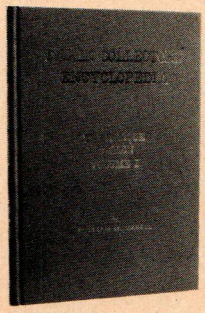

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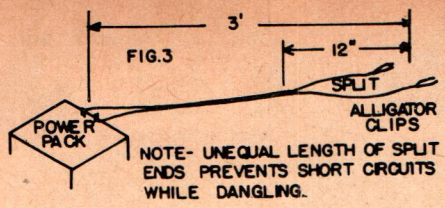

(right side of one, left side of the other, or vice versa. With diesels, you have to be certain that the trucks are level for meal tside frames sometimes cause short circuits by contacting the frame when the engine is inverted.

Better check this, too: sometimes tender trucks get turned around so that their insulated wheels are on the same side as those of the engine, whereas they should be on the opposite side. No current will flow and you'll have an open circuit if all insulation is on the same side. Generally the insulated drivers are on the left side of a steam loco and the insulated wheels on the right side of the tender. Confusion arises because you mount the trucks on the tender when the tender is inverted, see fig. 4.

While checking tender, you might also be sure the rubbing plates of the trucks are clean of paint and oil that would prevent their carrying power to the tender and thence to the engine. Some makers provide tiny springs around the kingpin screws to press the truck bolster firmly against the bottom of the tender. Better examine the wireless drawbar (if any) too, for the long piece of spring wire should be over one of the outer holes, not sticking outward. This assures positive contact with the pin on the tender, see fig. 5.

If you have not so far found why there is an open circuit on the engine, you'll probably have to remove the superstructure. On some diesels this merely clips on, and on others it is held down by one or more screws. American steam type engines will have the superstructure held down by from one (Tyco Shifter) to six (Bowser articulated) screws. Japanese imports have the boiler held down by three screws—one up into bottom of smokebox, through the cylinders, and two into the back of the cab; articulateds have to replace the single front screw by two into bottom of boiler ahead, behind, or within the center (actually for the rear engine) cylinder block. If you do not have the nerve to remove a superstructure, then you should not be doing your own trouble shooting beyond this point. Actually there is little to fear.

(Continued on page 54)

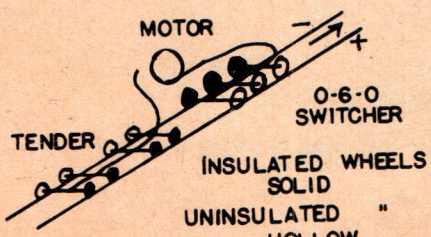

FIG. 4

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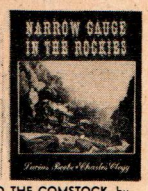

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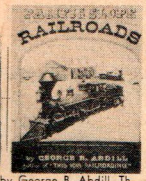

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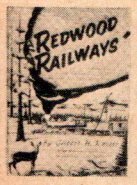

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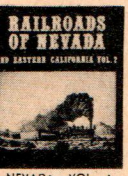

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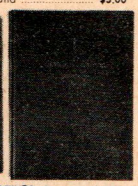

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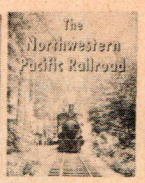

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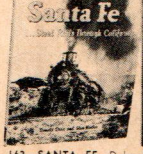

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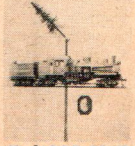

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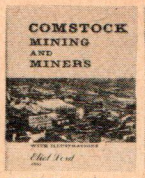

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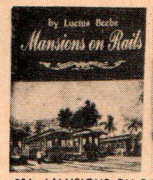

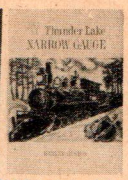

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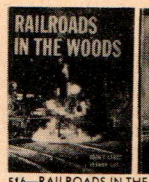

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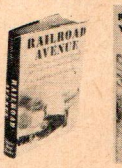

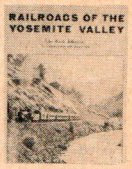

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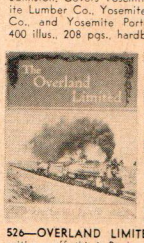

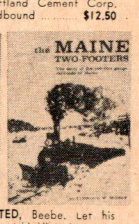

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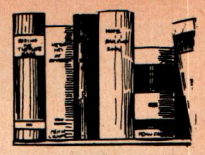

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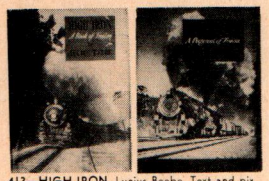

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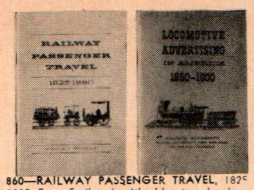

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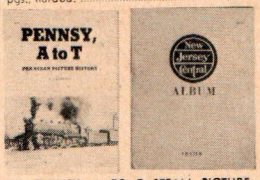

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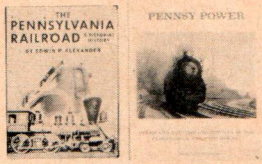

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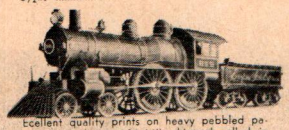

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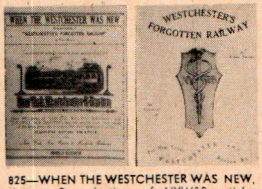

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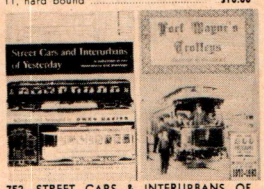

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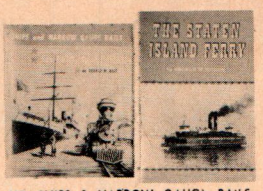

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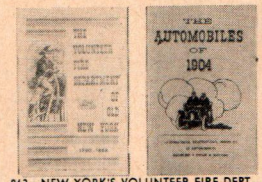

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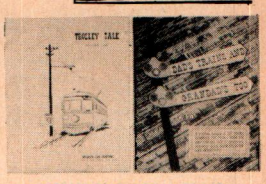

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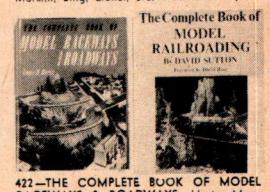

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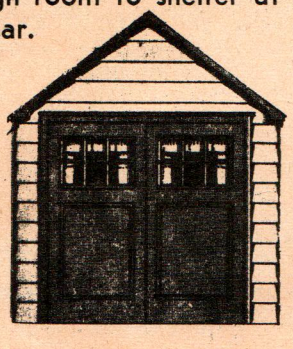
By the Layout Doctor

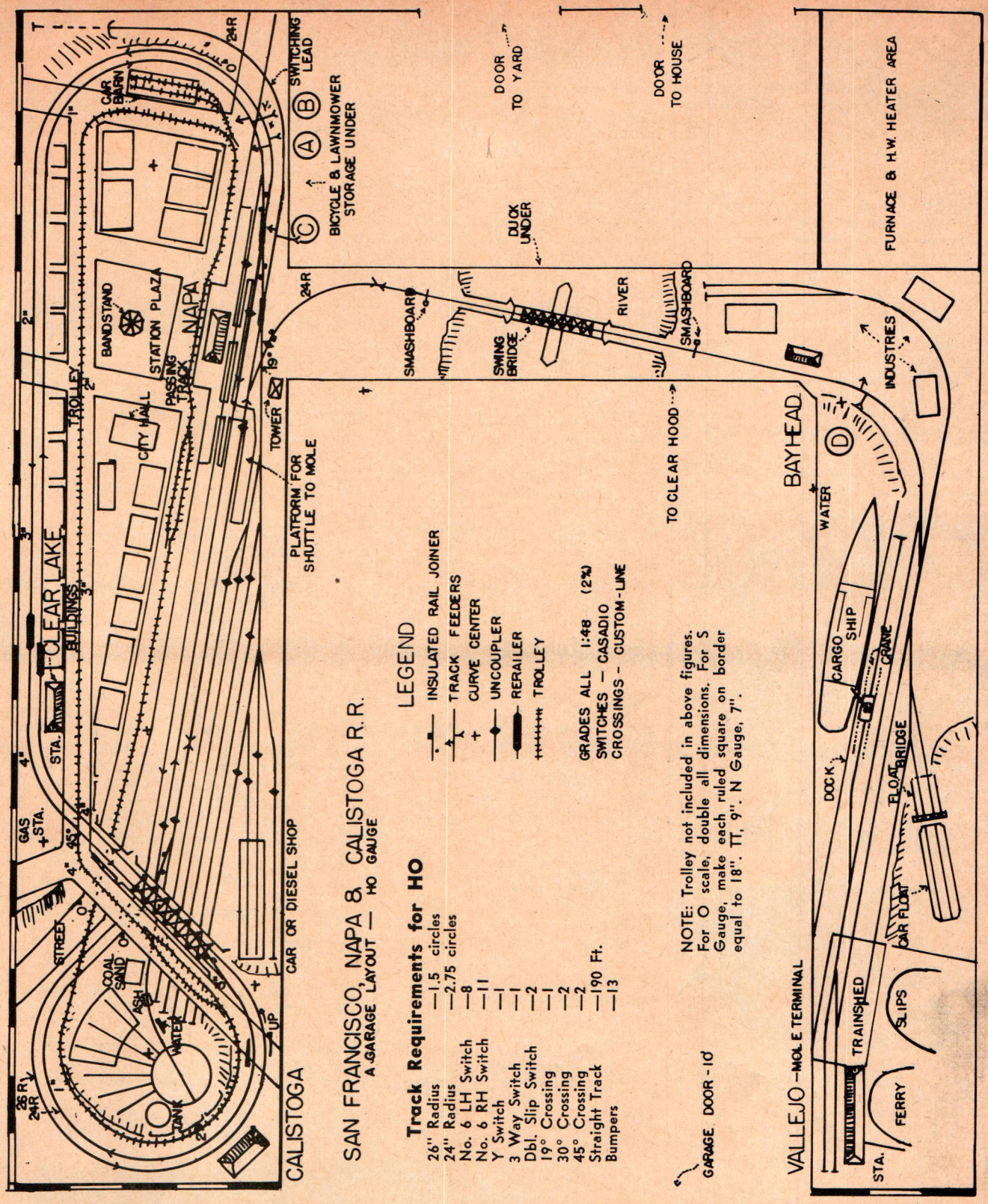
Double car garages can often house an extensive model railroad system and still leave enough room to shelter at least one car.



WHILE I DO not ordinarily design pikes especially for people who write in, I do try to fill what seem to be needs for certain shapes or dimensions of pikes. Of course, as with all my designs, presentation in RMC is intended mainly to give you ideas that will help you plan your own layout, making such major or minor changes as you find necessary. A reader in California wrote about his "typical" garage as appended to California homes. He wanted a layout that would fill the garage area not used for the automobile. The dimensions are his; the plan is mine.

The five by twenty-two foot area on one side seems to cry out to be the main part of the layout. The three foot wide shelf (not wide enough for a loop of even 18" radius track) works well as either a terminal or a branch line—and I've included both.

The layout has been designed to utilize the new Casadio switches imported from Italy by AHM, hence you will find in the design a pair of double slip-switches and a three-way switch, as well as rather compactly nested switches—for ones with motor housing attached. Two-railing through the Casadio switches is all-



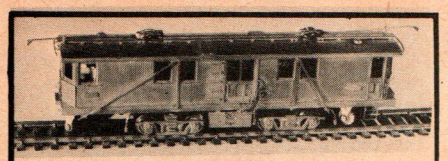
rails-live, similar to Custom-Line and Snap-Switches, so that elaborate "location" of insulated rail joiners is not needed; except to divide one track from another or one control section from another.

A fair sized trolley or interurban line has been included with 8" minimum radius curves, which crosses the double track railroad main line at two places with level crossings. These crossings should add some operating interest to the layout. The trolley line is two directional, with sprung diamond passing tracks at two sites, plus a two-car car barn.

The terminal at Vallejo is supposed to be on a breakwater located on the arm of San Francisco Bay, San Pablo Bay, on which that town is located. It has ferry connections to the big city, as well as car-floats and docks for coast-wise freighters. This terminal is usually served by a shuttle from Napa where there is a special platform for that purpose but at certain times of day through trains start and/or terminate at the breakwater.

The swingbridge on the extendable single track spur line is easily made from Atlas truss bridge components as shown in the April 1966 RMC and fully described in the new King Size Atlas track book just released.

Atlas Snap-Track or other track can be substituted for the Casadio track if desired, necessitating some changes in design and area required especially in the terminals.



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TEST TRACK

(Continued from page 15)

cribbed base, supplemented with a freight loading platform. Alternately, the kit is also offered as a box car body.

Material furnished with the kit is cut to size in most cases: milled roof and floor sections, end blocks, scribed wood, stripwood, door casting, and construction paper.

Construction is simple. The basic body is built up in the conventional manner. Two tie piles are assembled and cemented under the car. Then the freight platform is added. Assembly of steps and location is up to the builder.

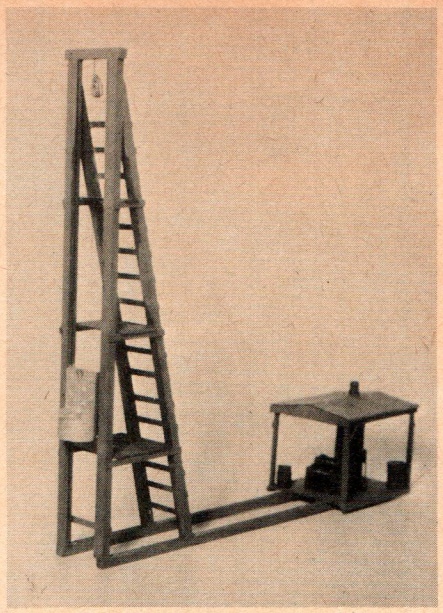
Finishing details are also up to the builder. On our model, the roof walk has theoretically been replaced with a strip of water proofing material. Handrails or ladders are also gone, though some modelers might like to add them. We followed the manufacturer's lead in using dark weathered colors. The station could also be painted as per your railroad's standard color scheme for depots. All original lettering would normally have been painted over. It's a nice model for anyone whose time is limited. List price, kit $2.95. Lee Nicholson.

Steam Donkey Pile Driver: HO

Mfd. by Huntingdon Model Works, P.O. Box 7, Huntingdon, Pa.

Huntingdon Model Works Kit K3001, Steam Donkey Pile Driver, is just the ticket for any pike that has any kind of construction or logging operation. It is large enough to attract the eye, yet small enough to fit a compact area.

Construction is easy, requiring only a few hours. Plans are complete and accurate, with templates provided to guide you in construction of the master parts. High quality white metal castings are supplied for the boiler, cable reels, reel housing, and pile driver weight, as well as barrels for fuel and water.



Steam donkey pile driver from Huntingdon Model Works kit assembles easily yet is distinctive. Model is largely of wood construction with cast metal fittings. Most wood parts are precut.

All wood parts are precut to exact length except for the side braces on the pile driver tower and the corner braces of the shed.

The model could be made to operate since the pile driver weight actually slides up and down in its grooved tower. The model would look very well driving a pile into a swampy area or at the site of a trestle. List price, $1.95.

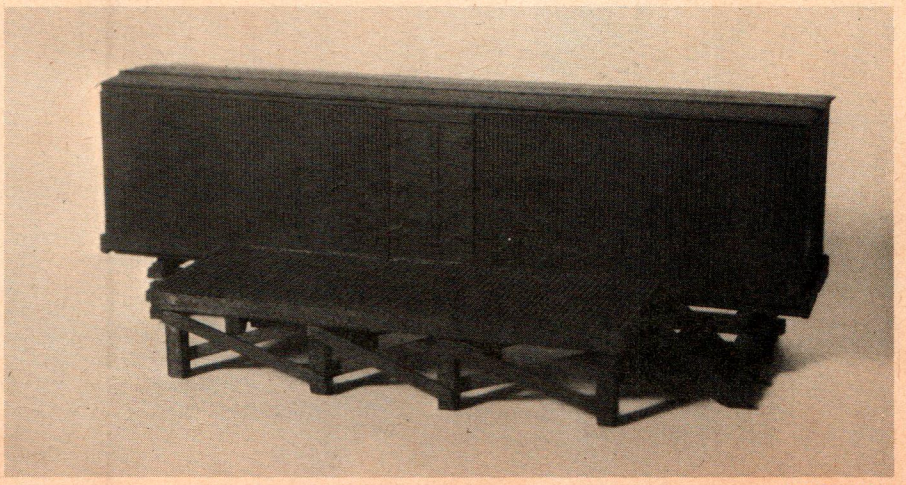
We give Huntingdon an "A" for this very simple wood model that is highly distinctive and worthy of a spot on most pikes. Lee Nicholson.

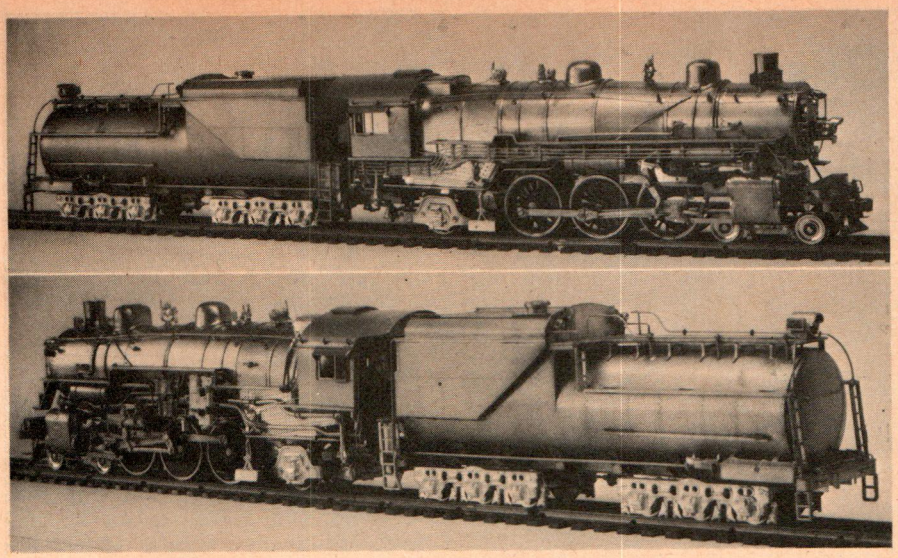
Southern Pacific HO 4-6-2

Mfd. by Balboa Scale Models, P.O. Box 2656, San Diego, Cal. 92112.

This engine should look familiar to old time fans or even to those who

Mil-Scale Products LCL Freight Shed consists of an insulated refrigerator car body mounted on cribbing, to which has been added a freight loading platform. Roof detail has been modified.





Balboa's SP P-10 Pacific is well worth a look at both ends. The tender comes with cast underframe, hand brake, and other detail. Barely visible in cab is boiler backhead, which hides KTM motor.

look at old issues of the model railroad magazines. Back in the late 30's, Varney first produced his Pacific which was modeled after the SP's P-10 heavy 4-6-2. Now Balboa has brought forth a brass version. The prototype is the same, even if the execution is different. The Varney engine was outstanding in its day and the Balboa job is equally outstanding in this brass age.

There were fourteen of the prototype engines constructed at Baldwin's in 1923 and '24 and they always carried the same numbers, 2478 to 2491 inclusive. Aside from the usual SP tender swapping, most of them changed little in appearance in their lifetime. In 1941, 2484-2486 were streamlined for use on the San Joaquin *Daylight*. This included a sport model cab, skyline casing and skirting along the running boards. The skirts were later removed as the engines were relegated to less glamourous use. Balboa has modeled the Daylight style with removable skirts in addition to the basic version. The original, or unstreamlined one is the subject selected for some testing.

The model weighs 29 oz. and is 12½" long. It is driven by a KTM motor via a metal worm and gear which are contained in a gear box. All drivers are sprung. Driver brake rigging is plastic. Brass brake shoes are mounted on the pilot truck.

The principle elements are formed of brass sheet. Supplementary parts, also of brass, are formed by coining or are cast. Some of the castings are not quite up to present day U.S. lost wax casting standards, but could be replaced by like parts if desired. The motor is concealed by a detailed boiler back end. All parts are well assembled, being square and securely soldered together.

The tender is as well detailed as the engine and is the first model of this particular Vanderbilt type to be produced. It is a model of one of the many standard tenders owned by the SP and had a higher than usual oil bunker. The tank is mounted on a well-detailed cast underframe. A small detail is the drop-handle hand brake mounted on the back of the oil bunker. The photo from the tender end shows this as well as some of the inside cab detail. A universal plastic coupler pocket is furnished for the tender. The front coupler and striker casting may be detached from the pilot beam if it is desired to replace the dummy front coupler.

When first tested, the engine was run as it came out of the box. Under these conditions, with a 17-car freight train at 12 volts, she drew 1 amp., which is a little high. After lubrication and a little running in, she pulled the same train at 12 volts but drew only .6 amp. Part of this trial was on a long curving 1% grade. A realistic speed was easily maintained without any slippage or excessive noise. This engine is certainly worth the price of $54.95 for the unstreamlined engine and $57.95 for the "Daylight" style.

JW.

NEXT MONTH - JULY:

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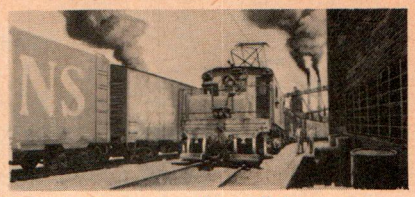

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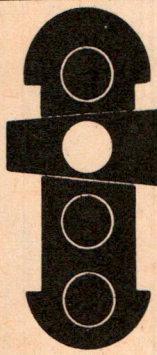

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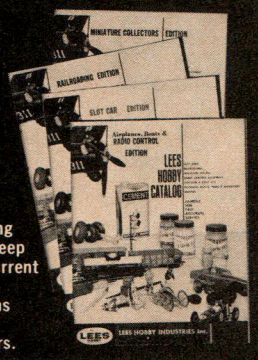
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Open Circuits

(Continued from page 49)

And your minor success in this matter will give you more confidence to proceed with other disassembly and reassembly projects on your pike.

Check The Motor

With the superstructure removed, you can see the motor. Has a wire that should be soldered or screwed or clipped to it come loose and need to be replaced? Put the mechanism on the track, with power, and try turning the motor gently by finger, either by the armature or the shaft. If it starts to run, your open circuit may be caused by the burning out of one segment of the armature of the motor. This is commonly called a burned out motor, though in reality it usually is the disconnecting (unsoldering) of leads from the winding of one pole of the armature from the corresponding segment of the commutator. By looking closely and pecking gently with tweezers or small screwdriver, you may find one such connection waving free. It can be soldered back by careful work with a soldering iron, but you may find it easier to install, or have installed, a new armature. For American motors these are usually available from the maker, though if the motor is not "mechanical"—i.e., take-apart-able, with screws — you may have to return the motor to the factory for its installation. With Japanese made motors, generally you must get a new motor. Some importers let you trade in the burned out motor.

At either the front or back of the armature winding of the motor you'll see a copper drum or disc divided into segments. This is the commutator. Pressing against this commutator are two brushes made of carbon (or of coiled copper mesh). If one has worn too short, it will not make contact with the commutator and hence you'll have an open circuit. For some reason or other, the brush which carries wears faster than the other. The spring which presses these brushes against the commutator may have lost its zip, or may have been lost or damaged. It should then be replaced, though sometimes it is possible to bend or stretch it so that it will work. Commercial motors have brushes sprung with just the right pressure, so that I'd not recommend trying to increase or decrease the pressure.

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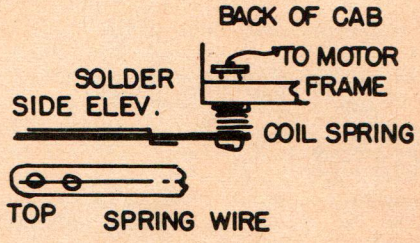
The lead wire from the tender, from the wireless drawbar anchorage, or from the other truck (of a diesel) is soldered to one brush. The other may have a wire soldered to it which runs to the frame somewhere. But generally the grounded brush is simply grounded by its spring.

While going through a batch of new but long-stored motors recently, I found a few where the usual contact between spring and brush, while strong enough, was impeded by dirt or oxidation so that there was an open circuit there until the site was cleaned.

Unlike a short circuit, an open circuit's cause is not found on the engine outside of the motor or its connections — to ground and to tender. One very rare exception to this may be found where pick-up on the engine is via feelers sprung against the wheels. If this pick-up is dirty, or is otherwise not sprung against the wheel treads, you will have an open circuit.



WIRELESS DRAWBAR FIG. 5

This is a long article about "nothing" — the open circuit. In actual practice you will gloss over many of the steps. For instance one train won't run, yet others will. It's not shorted out, it's not jammed, or bound, so you guess there is an open circuit of some kind. You turn power full on; you press the "hot shot button" (if any) to give some extra voltage; you push the engine along to a new spot on the track; you give her full power and do some quick reverses to jar her loose. Nothing happens? Then you'll have to go through many of the steps described. If other engines run (in the same control section?) you have the trouble localized in the engine right away and you don't have to worry about your power pack, its line cord, the base plug, the fuse box, whether you paid your electric bill, or whether there has been a power failure—massive or otherwise.

My apologies to the "old hands" if they have read this far. We fellers who have been in the hobby for several years take for granted an awful lot that we know from experience. Yet there is a great turn-over in model railroading, with many newcomers every month who need guidance in what we old-timers simply take for granted. They are often afraid to ask what they think are "silly" questions and available books don't always cover it. So where to turn?

TROUBLE SHOOTING

Conducted by Bill Schopp & RMC Staff

Questions for Trouble Shooting are welcome on any model railroad subject. Questions should be brief and to the point. We cannot undertake individual layout design work, nor can we recommend brands of merchandise. We will print those questions deemed of greatest interest to our readers. We will attempt to answer questions by mail when return post cards are included but cannot guarantee to answer all questions: Trouble Shooting, c/o RAILROAD MODEL CRAFTSMAN, 6 East Main St., Ramsey, N. J.

Steam Car Power Truck

L. R.: I would like to build a steam motor car of 1906 but lack the ability to build a suitable power truck. It should have 42" spoked wheels, side rods, but no valve gear. Could I mount Kemtron spoked drivers on a Walthers power truck and add rods?

ANSWER: You could, but it would be a ticklish task. It would be better to find a suitable—or nearly so—power truck already made and adapt it. I notethatthe Ken Kidder steam dummy (HO or HOn3) has 40" spoked drivers, rods, cylinders, and an 82" wheelbase. You'd have to work out a swivel and mounting arrangement. Its headlights should be suitable for an old steam car, also.

Freight Car Colors

J. D. Jr.: I am modeling a railroad in the golden age of steam in the 'twenties and 'thirties. I know freight cars were not in the bright colors of today, but what colors were they?

ANSWER: Box cars were box car (tuscan) red, as were cattle cars. Tank cars were black. Hoppers, gondolas, flats were either black or box car red. Reefers gave color—yellow for FGEX, orange for PFEX, white for MDTX. Cabooses were generally box car red, but some roads painted them bright red or yellow.

Metric Models

D. S. S.: I am trying to locate the importer of HO scale brass NYC cabooses, with "wooden" sides with box marked Metric Models. I can find no reference to any such importer in files of model railroad magazines running back eight years.

ANSWER: These, and a companion UP "steel" caboose were a venture by the late Max Gray into the HO field. They were advertised once under name of Peninsular Models. Your best hope of finding one would be vit RMC's Swappers Column.

Duplex Drives

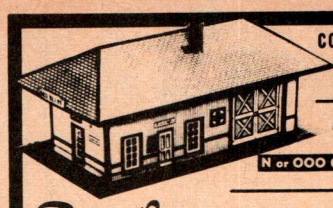
T. P. H.: Can you answer this for me about the so-called Duplex Drive steam locomotives such as the Pennsylvania S-1, Q-1, Q-2, T-1, etc. Since the driving trucks swivel, why aren't they called articulateds?

ANSWER: Ah, but mon petit, the engines did not swivel on the prototypes. It was done on the models to let them take model railroad curves which are much sharper than the prototype as you know. The Bowser T-1 4-4-4-4 would take less than 22" radius in HO, and the Gem S-1 6-4-4-6 will take 36" radius. The real ones, with rigid frames straight through would probably require 40" and 48" radii respectively if reduced to HO without adding the swivel.

Varied Details

W. W.: The model of X steam locomotive as imported by firm Y does not have the same details, even though they are fine, as a photo of the prototype that I have. Why don't they make them right?

ANSWER: They probably did get them right, but working from other photos. It is not now generally realized, but when a steam loco went through the shops for a general overhaul or rebuilding, many details were changed, either in the light of exper-



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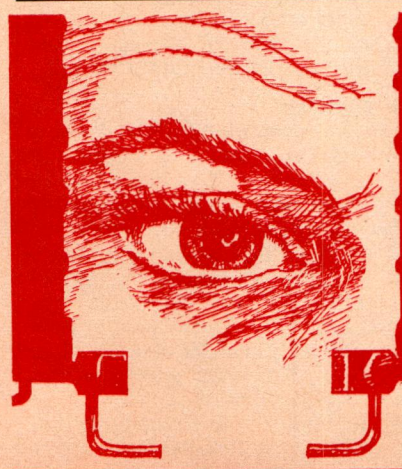

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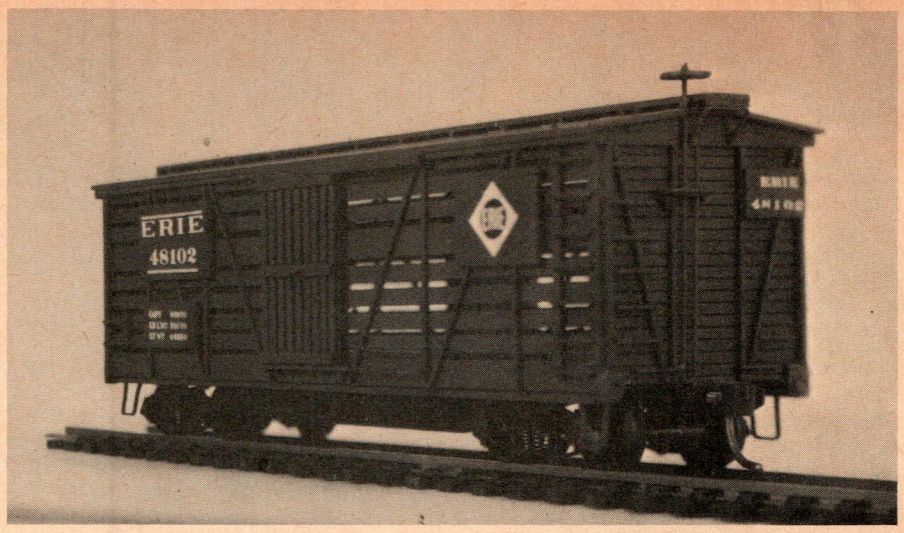


Main Line Models O scale stock car kit reviewed in May Test Track depicted a pre-production sample, unpainted and unlettered. Photo here shows Main Line's HO version with Erie lettering, a road name not initially available in the new O gauge stock car line.

ience, for experimental reasons, or simply at the convenience of the master mechanic. Cabs, domes, bells, stacks, whistles, headlights, power reverse gears, valve gears, crossheads and cylinders, drivers, tenders, pilots, even entire running gears were changed, from time to time, especially on a particularly long lived loco. It was sometimes said that they could jack up the bell and build a new loco under it. If you study numerous photos of the "same" prototype, especially as published in recent books, you'll spot many variations yourself and have other, less obvious ones described in the text.

Santa Fe Santa Fe

N. J.: Would you run an article on converting a United SF 2-10-2 into one of the older versions as once sold by Northwest Short Line?

ANSWER: Remove the "sport model" slope-front cab and replace with rectangular cab as found on SF 4-4-2, 2-6-2, 2-8-2, or 2-8-0. According to photos you should replace one air pump with an old type Elesco Feedwater pump. If you put an SF Berkshire 4 whl. trailing truck under the firebox, you'd get a model of the Santa Fe's very first 2-10-4, too.

Head End Cars

R. W.: What is the purpose of a train consisting of ten or twenty baggage cars and express box cars with a single coach at the end, apparently containing passengers? I have seen it several times.

ANSWER: These are probably mail storage and express cars, run on this one train to avoid disrupting passenger schedules by long stops for loading and unloading. A coach is sometimes used instead of a caboose, for the crew, because it rides better at speed; but on some trains passengers are carried.

Double Headers

N. M.; How were double headers controlled on real railroads—two engines at the head of the train? How can it be done in model railroading? Diesels?

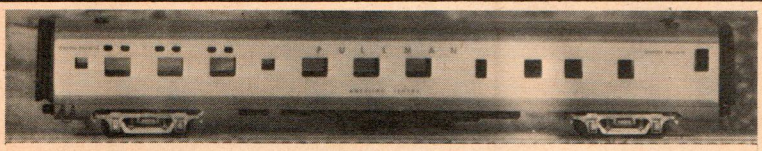
ANSWER: Steam double-headers had two separate crews, and the engines were kept working together by "feel" though the first engineer controlled the air brakes. In modeldom it is more complicated and some form of independent control such as Astrac would be needed, unless speeds of locos were similar. Diesels, for real, are controlled by the engineer who is in the first unit. In modeldom, you must try to have all diesels geared alike with the same motors in all.

Snow Fighters

P. B. B. Since my model HO pike runs through the mountains, I would like to equip it with all types of snow fighting equipment. Can you suggest any besides the Athearn rotary plow?

ANSWER: Red Ball at one time made a rotary plow of cast white metal. Ambroid has had two different types of wedge plows, Tyco had a little pilot mounted plow for use on their small locos. Kemtron makes a cast brass snow plow pilot.

For a flanger you'd have to add some parts to a Tru-Scale or other work car.



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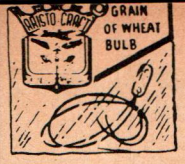

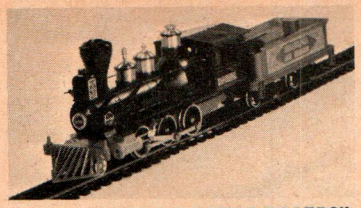

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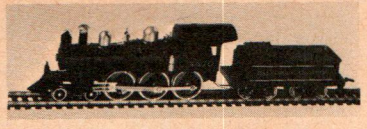

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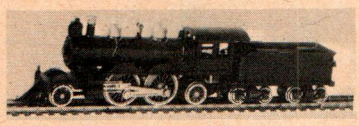

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- No. 42 CLEAR 29c
- No. 50 SMALL HEADLIGHT (turned brass w/pigtail): 12V. 20c

SUB-MINIATURE POINTED BULB (with plain brass base & pigtail): 4V.
- No. 51 CLEAR 48c
- No. 52 RED 50c
- No. 53 GREEN 50c

SUB-MINIATURE POINTED BULB (with plain base for headlights and signals): 16V.
- No. 54 CLEAR 54c
- No. 55 RED 57c
- No. 56 GREEN 57c

MINIATURE TUBULAR BULBS (with plain brass base for headlights and signals): 19V.
- No. 57 CLEAR 29c
- No. 58 RED 32c
- No. 59 GREEN 32c

BLINKER BULBS: 12V.
- No. 60 SMALL 45c
- No. 63 LIGHTSHIP 1½V 50c
- No. 70 DOME LIGHT: 3V 25c
- No. 71 INTERIOR LIGHT: 5V 50c

LONG TUBULAR BULB (small): 16V.
- No. 80 CLEAR 30c

LONG TUBULAR BULB (medium—1¼"): 3½V.
- No. 81 CLEAR 27c

LONG TUBULAR BULB (large—2": 12-15V.
- No. 82 CLEAR 40c

HO FLUORESCENT LAMP: 12V.
- No. 83 CLEAR 25c

TUBULAR BULB (with 2 holders): 12V.
- No. 84 CLEAR 35c
- No. 85 FROSTED 35c
- No. 86 RED 35c
- No. 87 GREEN 35c
- No. 88 AMBER 35c
- No. 89 BLUE 35c

'O' FLUORESCENT LAMP: 12V.
- No. 90 CLEAR 30c

'O' GAS LAMP (with screw base): 12V.
- No. 91 FROSTED 40c
- No. 92 FROSTED with wire lead 35c

HO GAS LAMP: 12V.
- No. 94 CLEAR 30c
- No. 94 FROSTED 35c
- No. 99 BRASS BELL & HANGER 25c

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BUTTON BULBS: 3V
- No. 181 CLEAR 20c
- No. 181 RED 20c
- No. 183 GREEN 20c
- No. 184 MILK WHITE 20c

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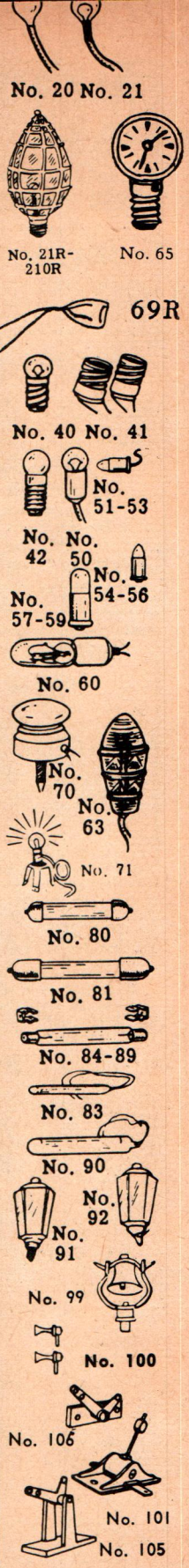

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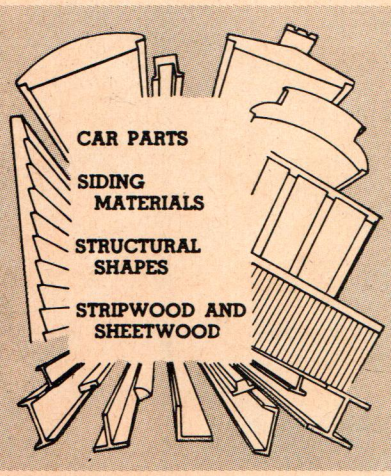

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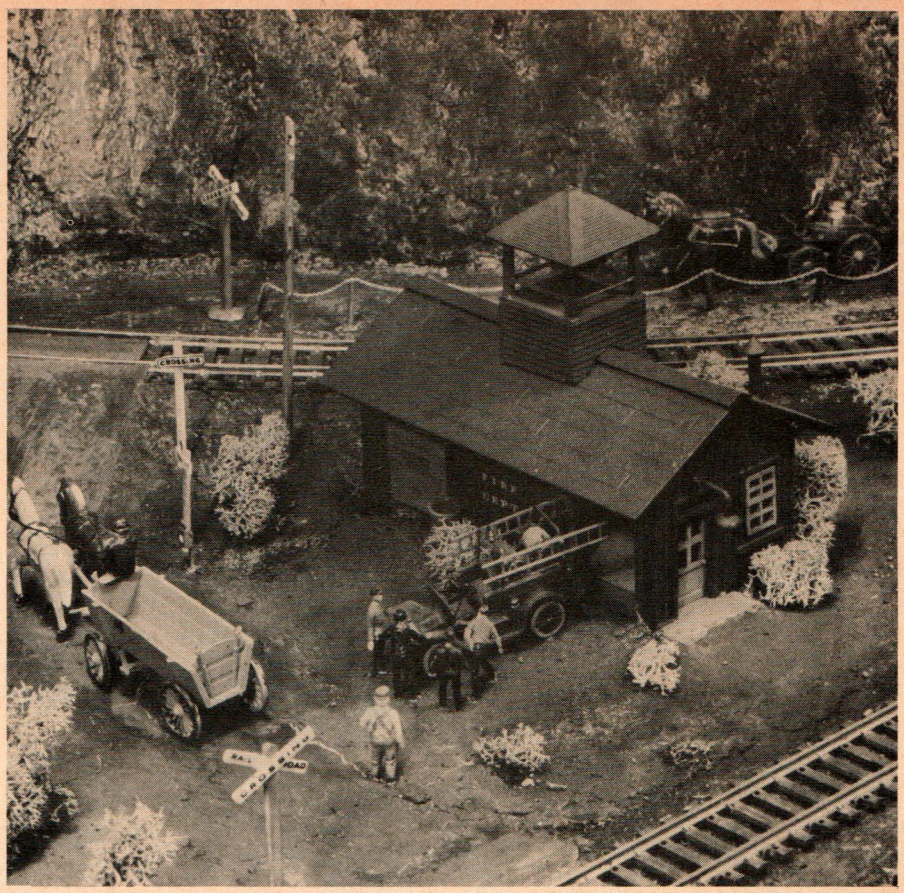

BETHEL CREEK, built by Bob Hudson, has just acquired a brand new Jordan firetruck.

Three-Levels

G. J.: Is there any prototype for having rapid transit type rail lines on three levels, as elevated, surface car, and subway?

ANSWER: There are so few surface lines left that the present answer probably is no. However years back the Herald Square area of New York City boasted the Sixth Avenue El, the New York Railways Surface cars, a subway, and, in certain parts the P.R.R. approaches to Penn Station.

The Franklin Institute Museum (in Philadelphia.) at on time had a large scale—around 3/8"—cut-away model of this vicinity enclosed in a large glass case. My understanding is that when more space was needed for exhibits this entire masterpiece was junked!!! Any photos of this available?

Cincinnati, Georgetown & Portsmouth RR

R. W.: A railroad with the same name as the Layout Doctor's plan in a recent issue—Cincinnati, Georgetown, & Portsmouth—was actually in existence at one time. I recall seeing a photo of it with three different gauges. What were they and where can I get a copy of the photo?

ANSWER: As to where a copy of the photo can be obtained, we wish we knew, for we wanted one to accompany the article. As to the three gauges, presumably these were 3', of which there was a lot in Ohio at one time; standard gauge, to which the 3' was being changed; and wide gauge 5' or over, which was the trolley gauge around Cincinnati.

Climatizing The Basement

C. P.: With summer coming on, what can be done to make the train room more livable?

ANSWER: A number of remedies suggest themselves. Air conditioning is the most likely answer for attics, spare rooms, and basements, with units coming in a wide variety of sizes and prices. Suggest your local air conditioning man give you an estimate, along with his recommendations.

Dehumidifiers also help in drying the air and help prevent rusting of equipment. Conversely, excessively dry climates may benefit from humidifiers, which will keep wood equipment from drying out and cracking.

Attic fans or exhaust fans are also useful in many areas.

Doesn't Want Horn Couplers

C. M.: Why do manufacturers persist in putting horn (NMRA) type couplers in kits when I much prefer another brand and resent paying extra for something I don't need.

ANSWER: The plastic or metal horn couplers included in many cars and locos are used by a large number of modelers. For those who prefer Kadee or other brands, fret not. Deletion of the units from kits would not result in any savings or lower kit prices.

Best suggestion, do as HOers have done since the beginning of time—start an HO coupler collection.

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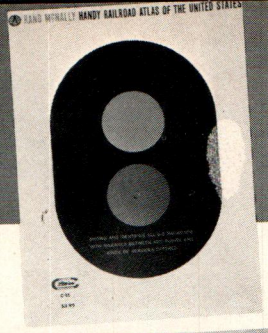

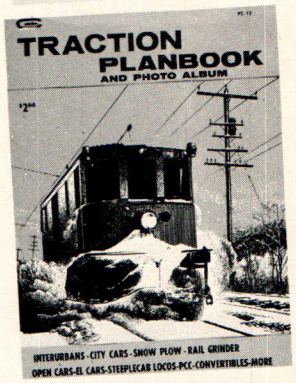

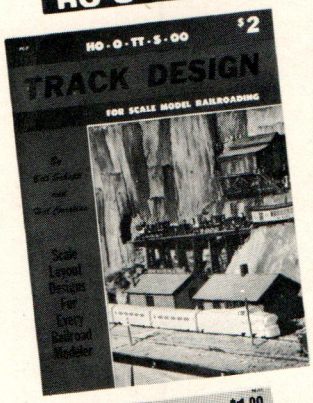

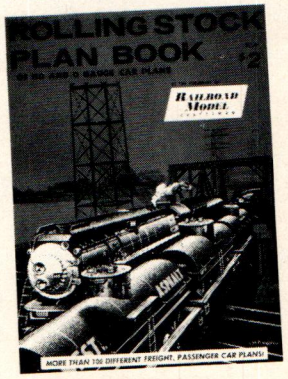

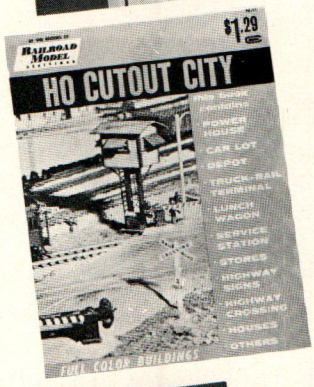

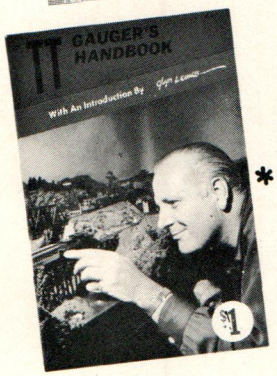

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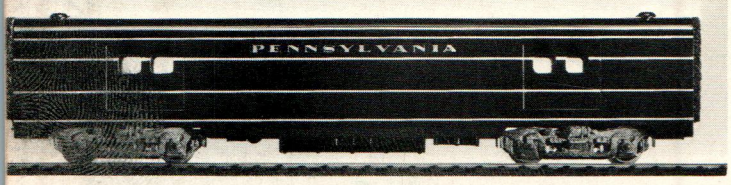

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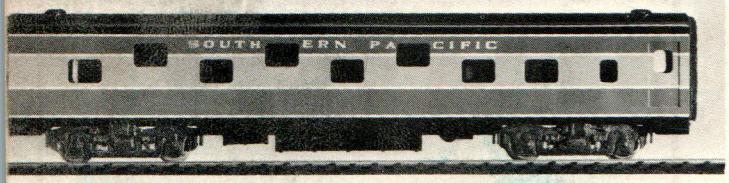

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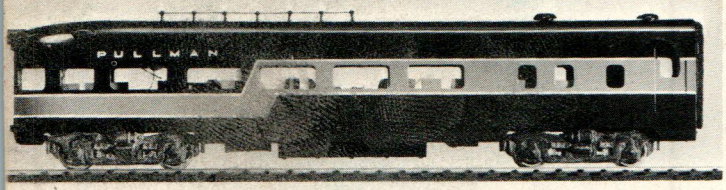

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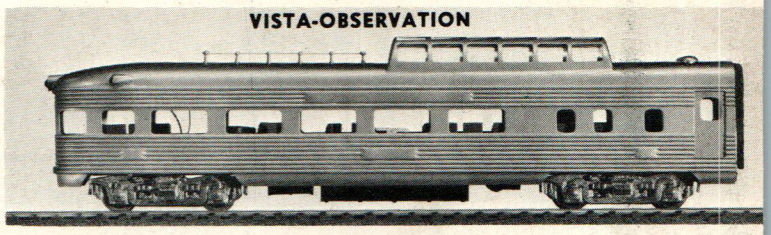

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